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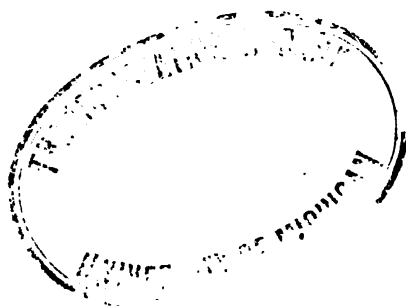


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THE
LONDON ENCYCLOPÆDIA.

VOL. XVI.

NUBIA TO PERAMBULATOR.



J. Haddon, Printer, Castle Street, London.

THE
LONDON ENCYCLOPÆDIA,
OR
UNIVERSAL DICTIONARY
OF
SCIENCE, ART, LITERATURE, AND PRACTICAL MECHANICS,

COMPRISING A
POPULAR VIEW OF THE PRESENT STATE OF KNOWLEDGE.

ILLUSTRATED BY
NUMEROUS ENGRAVINGS, A GENERAL ATLAS,
AND APPROPRIATE DIAGRAM.

Sic oportet ad librum, presertim miscellanei generis, legendum accedere lectorem, ut solet ad convivium conviva civilis. Convivator amittitur omnibus satisfacere; et tamen si quid apponitur, quod hujus aut illius palato non respondeat, et hic et ille urbane dissimulant, et alia fercula probant, ne quid contristant convivatorem.
Erasmus.

A reader should sit down to a book, especially of the miscellaneous kind, as a well-behaved visitor does to a banquet. The master of the feast exerts himself to satisfy his guests; but if, after all his care and pains, something should appear on the table that does not suit this or that person's taste, they politely pass it over without notice, and commend other dishes, that they may not distrust a kind host.
Translation.

BY THE ORIGINAL EDITOR OF THE ENCYCLOPÆDIA METROPOLITANA,
ASSISTED BY EMINENT PROFESSIONAL AND OTHER GENTLEMEN.

IN TWENTY-TWO VOLUMES

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THE

LONDON ENCYCLOPÆDIA.

NOXIOUS, *adj.* } *Lat. noxius.* Hurt-
NOXIOUSNESS, *n. s.* } ful; baneful; mischiev-
NOXIOUSLY, *adv.* } ous; unwholesome :
hence criminal; guilty; unfavorable: the sub-
stantive and adverb correspond.

The writers of politics have warned us of the
noxiousness of this doctrine to all civil governments,
which the Christian religion is very far from disturb-
ing. *Hammond.*

Those who are noxious in the eyes of the law are
justly punished by them to whom the execution of
the law is committed. *Bramhall against Hobbes.*

Preparation and correction is not only by addi-
tion of other bodies, but separation of noxious parts
from their own. *Brown.*

Kill noxious creatures, where 'tis sin to save :
This only just prerogative we have. *Dryden.*
Noxious seeds of the disease are contained in a
smaller quantity in the blood. *Blackmore.*

See pale Orion sheds unwholesome dew,
Arise, the pines a noxious shade diffuse ;
Sharp Boreas blows, and nature feels decay,
Time conquers all, and we must all obey. *Pope.*
Too frequent an appearance in places of much re-
sort is noxious to spiritual promotions. *Swift.*

NOY (William), attorney-general under Charles
I, was the son of William Noy of St. Burian,
gent. In 1593 he was sent to Exeter College,
thence to Lincoln's Inn, where he became eminent
in juridical knowledge. He was twice elected
M. P. for Helston, and in both parliaments ze-
alously opposed king James's attempts to increase
the royal prerogative. In 1625 he was elected
M. P. for St. Ives, and in that and the following
parliament continued to shine as a popular patriot ;
but in 1631 the court converted him by appointing
him attorney-general ; after which he pleaded for
the extension of the royal prerogative as zealously
as he had formerly opposed it. He wrote several
treatises ; particularly, 1. *The Complete Lawyer* ;
2. *Arguments of Law, and Speeches* ; 3. *The*
Principal Grounds and Maxims of the Laws of
England, 4to. He died at Tunbridge Wells, in
August 1634.

NOYON, an ancient and pretty post town,
and chief place of a canton in the arrondissement
of Compiègne, department of the Oise, France,
containing 3750 inhabitants. Situated at the foot
and on the side of a hill, this town is surrounded
with a number of richly cultivated gardens, pre-
senting an appearance of the greatest abundance
and riches. It is very well built and very airy,
adorned with public fountains and crossed by
the Vorse, which here separates into two branches,
and falls into the Oise at the distance of about a
mile from the town. Noyon was, for some time,
the capital of the emperor Charlemagne, who was
crowned here. Hugh Capet was elected king
here in 987. Three times it was devastated by

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fire, in 1131, 1152, and 1228. There are manu-
factories here of linen, muslins and caps, and
large tan-yards ; and a trade is carried on in these
articles, and in corn, leather, &c. This is the
native place of the celebrated Calvin. It is
eighteen miles north-east of Compiègne, and
thirty-one S. S. W. of St. Quentin.

NOZLE, *n. s.* From Nose, which see. The
nose ; the snout ; the end.

It is nothing but a paultry old sconce, with the
noze broke off. *Arbuthnot and Pope's Mart. Scrib.*

NUBIA, a country of Africa, situated between
the cataract of the Nile, at Syene or Assouan, Aby-
sinia, and the Red Sea. It sometimes is considered
as including Sennaar, but this seems of sufficient
importance as a separate state to be treated dis-
tinctly, see **SENNAR** : the whole is a part of the
ancient Ethiopia. Nubia consists almost entirely
of rocks and sandy deserts. Along the banks of
the Nile it is indeed occasionally fertile, and di-
vided into a great number of petty principalities
or states, governed by absolute chiefs, called me-
leks or cachefs. But the whole population of
this territory, which is about 500 miles long, but
very narrow, is estimated by Mr. Burckhardt at
only 100,000 individuals. It is divided into
two parts, called Wady Kenous, and Wady el
Nouba, sometimes also called Sayd : the inhabi-
tants of these two divisions speaking different
languages, although their manners and customs
appear similar. The city of Dongola, to which
the Mamelukes retired on their being driven
by the pacha of Egypt from that country, is the
largest place along this line. Its neighbourhood is
particularly famous for the breed of horses, one
of which is said to be valued on the spot at ten
or twelve slaves. But Dehr is regarded as the
capital of Nubia.

The geography of the whole valley of the Nile
south of Philæ is very defective. Its geology
and mineral products, the probable elevation of
the stream of the Nile, and its natural history,
even as to the plants and animals, &c., have
been wholly neglected until the journey of Burck-
hardt, who himself did not penetrate farther into
this region than about 26° N. lat., and who
has by no means exhausted these topics. We
shall give, however, the particulars that have
been furnished, and add a few extracts from the
observations of recent travellers.

Beyond Egypt the eastern bank of the Nile is
said to be better watered and adapted to culti-
vation than the western ; although almost all the
ruins of this region are on the opposite bank.
It is thought, therefore, that this last must have
been formerly more fertile, but has been reduced
to its present state by the continual encroach-

B

ment of the immense moving sands of the west. The territory is irrigated here not by the overflowing of the Nile, but by *sakies*, or wheels, constructed for the purpose of raising the waters of the river; the government receiving for the use of each wheel so many fat sheep, and measures of grain, called *dhourra*. This forms the great object of Nubian culture; it is the botanical *holcus arundinaceus*. The people grind it by strewing the grain upon a large stone, and rubbing a smaller one over it. If the bread is to be of superior quality, the *dhourra* is well washed and then dried in the sun. This pains, however, they do not often take. It is placed in an earthen jar, and left to ferment from twenty-four to thirty-six hours, when it acquires a sourish taste; and the substance being merely poured upon an iron plate, or flat stone, placed over the fire, in a few minutes it is baked into cakes resembling the Abyssinian *liff*. They are brought to table hot, in a wooden bowl, with onion sauce, broth, and milk, or butter. Cakes of a thinner kind, and well toasted, are prepared for the caravans, and will keep for some months. They have also, after the *dhourra*, a crop of barley here, French beans, lentils, or water-melons. Tobacco is cultivated every where, and is a chief luxury, either smoked or sucked rather than chewed. Animal food is scarce. The liquors (in which they indulge) are palm wine, a spirit distilled from dates, and, above all, *bouza*, a fermented liquor made from the *dhourra*. No fruit is cultivated except palms for dates.

The climate of Nubia, though intensely hot in summer, is very dry and salubrious. The plague, which is so common near the lower parts of the Nile, never reaching beyond the second cataract. So healthy was this country during Mr. Burckhardt's visit, that in a journey of five weeks he did not observe a single person laboring under disease. The small-pox, however, makes occasionally great havoc here. In general the inhabitants are of full stature, well made, and have fine features. The women possess sweet countenances and pleasing manners. They are also said to be modest and reserved: but, if the wealthiest Nubian happen to have a daughter whom the chief demands in marriage, the father cannot venture to refuse him: and the chiefs have thus wives in every considerable village. The Nubian is extremely jealous of his wife's honor, and on the slightest suspicion of her infidelity, we are told, would carry her in the night to the side of the river, lay open her breast by a cut with his knife, and throw her into the water, as he says, 'to be food for the crocodiles.' Their houses are chiefly of mud or loose stones; the last being usually planted two together, one for the male, and the other for the female members of the family. The mud huts are roofed with *dhourra* stalks or palm leaves. The utensils of the family generally consist of about half a dozen coarse earthen jars, a few earthen plates, two stones for grinding the *dhourra*, and a hatchet. The domestic employment of the females consists in weaving coarse woollen and cotton cloth for shirts and mantles, and mats of date leaves; they also make the small drinking bowls and plates used for the *dhourra* bread. A woollen

cloth and linen cap form the dress of the rich. The women wrap themselves in black woollen gowns; but boys and girls go about naked. In ascending the Nile, the dress of all classes becomes more and more scanty.

Although fire-arms are comparatively rare, the Nubian is seldom unarmed; the first purchase a boy makes is a short crooked knife, tied over the elbow, and ready to be drawn on the slightest quarrel. The Kenou and Noubia tribes are almost always engaged in bloody quarrels; and, when death ensues, the family of the deceased may demand the price of blood, or retaliate on the brother, son, or near relative, so that a whole family is often thus obliged to fly. Great numbers of the lower orders repair to Cairo to act as porters.

The natives of Dar el Mahass, the most southerly district, differ considerably from the other Nubian tribes. They are perfectly black, and their lips like those of the negro, but not the nose or cheek. The king of Mahass is described by Burckhardt as a mean-looking man, attended by half a dozen naked slaves, armed with shields and lances. This is the nearest part of the black country whence slave traders arrive at Cairo. Their houses are constructed of mats made of palm leaves, fastened to high poles, the extremities of which go through the roof.

Nubia is principally visited for its splendid remains of antiquity, rivalling the most colossal monuments of Thebes or Hindostan. The most magnificent is that of Ipsambul, still in a state of almost complete preservation, and sculptured out of the living rock. It has at least ten colossal figures attached; six in front, and four that Mr. Burckhardt found buried in the sand, at about the distance of 200 yards. One of them, from the dimensions of the shoulder, could not, if uncovered, be less than sixty-five or seventy feet in height. They were conjectured to have been constructed to serve as ornaments to an immense temple: some of their countenances were beautifully expressive.

Another extensive part of Nubia extends from the Nile to the Red Sea; and here modern travellers have only penetrated in the line taken by the caravan to Sennaar. It is said to contain not a single permanent abode, but is a complete desert, interspersed with wadys or valleys, affording some few trees and shrubs, with a few wells or rills. Burckhardt, after passing through the deserts of Suez and Sinai, did not think, however, this quite so dreary. Unlike the other African deserts, it is covered with hills.

At the southern extremity of this tract is Berber, consisting of four large villages, employed in a brisk trade between Egypt, Arabia, and Central Africa. The people are said to be a handsome race, of a dark red-brown color. The men are taller than the Egyptians, and much stronger; the nose is often perfectly Grecian here, and the cheek bones not prominent. 'We are Arabs, not negroes,' they say; and they are careful to maintain the purity of their race. Few men have more than one wife; but every one who can afford it keeps a slave or mistress, called his companion. Few traders pass through Berber without taking one of them, were it only for a

week or two; and a general dissoluteness of manners is the natural effect. Every thing discreditable to humanity is said to be found in the character of this race; but treachery and avidity predominate. Quarrels are frequent and violent, especially at their drinking parties; and they commonly end in bloodshed. The chief scenes of these disorders are the bouza huts, kept by women of infamous character, by whom the liquor is manufactured: no one ventures there without taking his sword with him; and various persons of distinction who have entered have never been known to return. A common trick is to entice strangers to one of these women, who next day is owned as a relation, and vengeance or presents demanded for the dishonor done to the family.

Another part of the miscellaneous territory is the road to Souakin, through the populous and fertile district of Taka.

The chief trade of Berber, and of Nubia generally, consists in slaves imported from the interior of Africa, and conveyed northwards into Egypt, or across the Red Sea by Souakin and Jidda. The annual number is estimated at 5000, of whom about 2500 are for Arabia, 1500 for Egypt, and 1000 for Dongola and the Bedouins of the mountains. Few of these unhappy beings are above the age of fifteen; they are chiefly used in the east as domestics. The most valued are between eleven and fifteen; if males they sell for fifteen or sixteen dollars; if females, for twenty-five or twenty-six. While they remain within the negro territories they are treated with great indulgence; but when once in the desert, where they have no chance of escape, the treatment is entirely changed.

Mr. T. Legh, M. P., is the earliest of the modern band of travellers whose contributions to the illustration of this region are before us. He penetrated further along the banks of the Nile into the ancient Ethiopia than any preceding traveller. At Siala it was deemed expedient to wait on the Douab cacheff, who was encamped about a mile and a half from the river, forming a sort of advanced guard of the Nubians: they found the men in wigwags; the women and children apart in tents; the whole body about 400; the horses and camels feeding around them. The cacheff received them kindly; made no sort of objection to their proceeding up the river, and told them he would send an express to Dehr, to inform Hassan cacheff of their intended visit to his capital. He offered them milk, flour and butter, invited them to eat out of the same bowl with him, the strongest mark of hospitality and friendship, and, in return for some coffee and tobacco, presented them with a sheep.

At Dondour was a small temple containing nothing more remarkable than the character A + U upon the fragments showing it to have been the possession of some early Christians. The weather began now to be exceedingly sultry; the thermometer in the cabin was at 86°; in the outer air 96°, and in the sand 126°; but it was a great relief to find the inhabitants every where peaceably disposed; they brought the travellers dates, milk, and whatever their scanty means enabled them to afford. The temple of Sibhoi was minutely

examined, and no doubt remained of its having been a celebrated sanctuary of pure Egyptian architecture. Mr. Legh thinks it probably of an earlier date than those in Egypt; the walls being built in a ruder style, and the hieroglyphics, though bold, of inferior execution; but the statues, he adds, and the sphinxes would bear a closer examination. He was greatly struck with the high state of preservation of the stone and outward walls of these venerable ruins, as compared with the state of those below the cataracts. 'No reasonable allowance of difference of date,' he says, 'will explain this; and we must seek for the cause in the mild unalterable climate between the tropics. The corroding hand of time has no effect upon them, but they are abandoned to the desert, and many of them will in a few years entirely disappear.'

About fourteen miles further brought them to Dehr, the capital of Nubia, to wait on Hassan cacheff, the chief of the Barabras. At this moment the people were celebrating the festival of the cacheff's marriage, which our travellers were rather surprised to hear them call (in lingua Franca) a fantasia. They rode through scattered plantations of date trees, among which were interspersed a number of mud huts, till they reached the house of the chief, distinguished only by being built of brick, and consisting of two stories. The natives, many of whom were drunk, were greatly astonished at the sudden appearance of the strangers; but offered them no incivility. They brought them paste, with boiled goat's flesh swimming in butter. After waiting about four hours, the cacheff made his appearance, attended by five or six officers, and a number of Negro guards; he was a young man, about six feet high, of a handsome person, half drunk with araki, a spirit distilled from dates. He asked them boisterously what they wanted, and why they came to Dehr? This was but a discouraging reception from a man who had 300 armed negroes at his elbow, and at least 3000 in the district, ready to execute any of his commands. On retiring, he ordered his secretary, who spoke Arabic, to conduct them to a lodging for the night; this was a mud hut of two apartments, but without a roof; it was, however, next to that of the cacheff, the best in all Dehr. Early in the morning the secretary called upon them, and hinted that his master expected a present, and that one of their swords would be acceptable. On waiting on the Cacheff, they offered him a watch, of which he declined the acceptance, as they were unable to comprehend its use. Perceiving that any facilities for the further progress of their journey depended on the sacrifice of one of their swords, Mr. Legh presented him with a fine Damascus blade worth at least 500 piastres: the effect was instantaneous: his eyes sparkled with pleasure, and his lips uttered nothing but friendship. He enquired after our author's harem—if he had left it at the cataract, 'meaning,' says Mr. Legh, 'as I understood, to give me a female slave to wait upon my wife.' He afterwards made him a present of a negro boy, and granted permission for them to proceed to Ibrim, offering horses and dromedaries, or any thing else that could be of service.

It required half a day's journey from Dehr to reach Ibrim, and, as there was nothing to interest them there, they returned to Dehr the same evening. The following is all that we are told of Ibrim. 'Not a vestige of life was seen about us; the destruction of Ibrim by the Mamelukes, when they passed two years ago into Dongola, had been so complete that no solitary native was to be found wandering among its ruins; there was not even a date tree to be observed. The walls of the houses, which are in some places still standing, alone attest that it has once been inhabited. The population was partly carried off by the Mamelukes, and has partly removed to Dehr.'—p. 76.

At Dehr the only monument of antiquity is a temple or grotto, excavated in the solid rock; but at Amada, about an hour's journey from thence, on their return, they saw a fine temple which had been converted by the early Christians into a church; the painted figures that had been stuccoed over were in wonderful preservation. Below Sibhoi they fell in with their old acquaintance shekh Ibrahim (Mr. Burckhardt), whom they had left at Siout in good health and condition, and well dressed like a Turkish gentleman; he had now the appearance of a common Arab, looking very thin and miserable. He had been living, he said, for some time with the shekhs of the villages on lentils, bread, salt, and water, and was most happy to share a mutton chop with our travellers, though cut from a lean and half starved sheep, for which, however, they had paid the extravagant price of a dollar. Ibrahim then departed on his route to the southward.

At Dakki there is a fine and perfect temple, with the hieroglyphics in high relief. The height of the propylon is about fifty feet; its front ninety feet, and its depth at the base eighteen feet. The space between that and the temple forty-eight feet; the temple itself eighty-four feet in length, thirty in breadth, and twenty-four in height. Many Greek inscriptions are cut on the propylon, recording the devotion of those who visited these sacred buildings. Of these our travellers copied two. The first is—'I, Apollonius, the son of Apollonius, commander-in-chief of the province of Ombi, and of the district about Elephantina and Philæ, came and worshipped.'—The second—'I, Callimachus, the son of Hermon, came with him and worshipped the same God, in the thirty-second year of the emperor— ΙΦΟΥΦ —the meaning of which they pretend not to determine.

At Guerfeh Hassan, nine miles below Dakki, they found also an excavated temple 'that far surpassed any thing they had witnessed above or below Essouan, and was indeed a stupendous monument of the labor bestowed by the ancients on their places of devotion.' It consists of an area or outer court sixty-four feet in length, and thirty-six in breadth, having six columns on each side, to which are attached statues of priests. The passage into the temple, through a door six feet wide, is formed by three immense columns on each side, to which are attached colossal statues of priests (on pedestals three feet three inches high), each eighteen feet six inches in

height; and whose splendid dresses had once been covered with paint and gold. There are three chambers of considerable size, and four smaller apartments. 'We found,' the travellers say, 'no inscription on this temple, which is a most astonishing monument of labor and ancient magnificence. The various apartments we explored, together with the statues that ornament them, are all hewn out of the living rock.' A similar magnificent though ruined structure was found at Kalaptshi.

The plain of Umbarakat is strewn with ruins. At Sardab and Debodé are also many interesting ruins which are briefly described. On the second arrival of our travellers at Philæ they observed that 'it is impossible to behold the profusion of magnificent ruins with which this island abounds without feelings of admiration and astonishment.' at the same time it is avowed that the excavated temple of Guerfeh Hassan, and the ruins of Dakki and Kalaptshi, appeared to rival some of the finest specimens of Egyptian architecture.

'During the whole of this interesting journey,' says Mr. Legh, 'we had found the natives universally civil, conducting us to the remains of antiquity without the least suspicion, and supplying us with whatever their scanty means would afford. It is true they viewed us with curiosity, and seemed astonished at our venturing among them; and at Kalaptshi they asked our guide, 'How dare these people come here? Do they not know that we have 500 muskets in our village, and that Douab cacheff has not the courage to come and levy contributions?'—p. 97.

Captain Light of the artillery followed a similar track with Mr. Legh to exactly the same point in Nubia, Ibrim; whence he returned down the hill, and examined the temple of Leboo, called Legh Sibhoi; and describes its avenues of sphinxes, its gigantic figures in alto-relievo, its pilasters, and hieroglyphics. He discovered at Ouffedonnee the remains of a primitive Christian church, in the interior of which were many painted Greek inscriptions and figures of scriptural subjects. The ruins of a temple at Deboo are also minutely described. Captain Light thus sums up his observations on the natives of Nubia:—'The people who occupy the shores of the Nile between Philæ and Ibrim are, for the most part, a distinct race from those of the north. The extent of the country is about 150 miles, which, according to my course on the Nile up and down, I conceive may be about 200 by water, and is estimated at much more by Mr. Hamilton and others. They are called by the Egyptians Goobli, meaning in Arabic the people of the south. My boatmen from Boolac applied Goobli generally to them all, but called those living about the cataracts Berber. Their color is black; but the change to it, in the progress from Cairo, does not occur all at once to the traveller, but by gradual alteration to the dusky hue from white. Their countenance approaches to that of a negro; thick lips, flattish nose and head, the body short, and bones slender: the leg bones have the curve observed in negroes: the hair is curled and black, but not woolly. Men of lighter complexion are found amongst

them; which may be accounted for by intermarriage with Arabs, or a descent from those followers of Selim the Second who were left here upon his conquest of the country. On the other hand, at Galabshee, the people seemed to have more of the negro than elsewhere; thicker lips, and hair more tufted, as well as a more savage disposition.

'The Nubian language is different from the Arabic. The latter, as acquired from books and a teacher, had been of very little use to me in Egypt itself; but here not even the vulgar dialect of the Lower Nile would serve for common intercourse, except in that district extending from Dukkey to Deir, where the Nubian is lost, and Arabic prevails again: a curious circumstance; and, when considered with an observation of the lighter color of this people, leads to a belief of their being descended from Arabs. The Nubian, in speaking, gave me an idea of what I have heard of the clucking of Hottentots. It seems a succession of monosyllables, accompanied with a rise and fall of voice that is not disagreeable. I saw few traces among them of government, or law, or religion. They know no master, although the *cachef* claims a nominal command of the country: it extends no farther than sending his soldiers to collect their tax, or rent, called *Mirri*. The pasha of Egypt was named as sovereign in all transactions from Cairo to Assuan. Here, and beyond, as far as I went, the reigning sultan Mahmood was considered the sovereign; though the *cachef's* was evidently the power they feared the most. They look for redress of injuries to their own means of revenge, which, in cases of blood, extends from one generation to another, till blood is repaid by blood. On this account they are obliged to be ever on the watch and armed; and, in this manner, even their daily labors are carried on,—the very boys go armed. They profess to be the followers of Mahomet, though I rarely happened to observe any of their ritual observances of that religion. Once, upon my endeavouring to make some of them comprehend the benefit of obedience to the rules of justice for punishing offences, instead of pursuing the offender to death as they practised, they quoted the Koran to justify their requiring blood for blood. Their dress, for the men, is a linen smock, commonly brown, with red or dark-colored skull cap. A few wear turbans and slippers. The women have a brown robe thrown gracefully over their head and body, discovering the right arm and breast, and part of one thigh and leg. They are of good size and shape, but very ugly in the face. Their necks, arms, and ankles, are ornamented with beads or bone rings, and one nostril with a ring of bone or metal. Their hair is anointed with oil of cassia, of which every village has a small plantation. It is matted or plaited, as now seen in the heads of sphinxes and female figures of their ancient statues. I found one at Elephantina which might have been supposed their model. Their little children are naked. Girls wear round the waist an apron of strings of raw hide, and boys a girdle of linen. Their arms are knives or daggers, fastened to the back of the elbow or in the girdle, javelins, tomahawks, swords of Roman shape,

but longer, and slung behind them. Some have round shields of buffalo hide, and a few pistols and muskets are to be seen.'—pp. 93-97.

In January 1813 Mr. Burckhardt left Cairo on his first journey through Nubia, and returned to Assuan on the 30th of March, thirty-five days after setting out from this place, during which he only allowed himself a single half-day's rest at Derr. No opportunity offering of proceeding into Western Africa, he projected a second journey to the banks of the Atbara, or Astaboras, and from thence to Djidda or Moka, and to return by land along the eastern shore of the Red Sea to Cairo. The detailed account of this expedition, as far as Djidda on the Arabian coast of the Red Sea, forms the subject of the greater part of a volume of his travels now before us. In this journey he crossed that desert to the westward of Dongola by which Bruce returned from Abyssinia, and which has been described in such frightful terms by this enterprising traveller; but the dangers and the sufferings of Burckhardt were occasioned neither by the privations of the desert, nor its poisonous winds, nor its moving pillars of sand; but by his apparent poverty, which exposed him to every kind of insult from the wretches with whom he travelled. In fact he economised the means supplied to him by the African Association, until he had nearly defeated the objects for which he was employed. On the 24th February he left Assuan, on the first of these journeys in Nubia, with two dromedaries, and an Arab guide, a native of Nubia, for whose services he bargained as far as Derr, a journey of 140 miles, and for which one Spanish dollar was considered as ample payment. The Nubians of Assuan were, at the time of his departure, at war with their southern neighbours, on account of the latter having intercepted a vessel laden with dates belonging to a merchant of the former. In the scuffle a woman in a state of pregnancy had been killed by a stone. The southern party, to whom the deceased belonged, were now demanding from their enemies 'the debt of blood,' not only for the woman, but for the child also which she bore in her womb; and this dispute had not been adjusted on our traveller's return. Immediately beyond Assuan the mountains approach so near to the Nile as to leave scarcely the width of 100 yards of cultivable ground. Our traveller passed the first night with the shikh of Wady Debot (it may here be observed, once for all, that though the term *wady* generally means a river, it is used, along the borders of the Nile as far as Sennaar, for a valley, or ravine in the mountains). 'Here,' says Mr. Burckhardt, 'I first tasted the country dish—which, during a journey of five weeks, became my constant food—thin, unleavened, and slightly baked cakes of *dhourra* (*holcus arundinaceus*), served up with sweet or sour milk.'

The whole of the road to Derr, on the east bank of the river, is perfectly safe, provided the traveller be accompanied by a native. The people were every where curious and inquisitive. From Assuan to Dehynt the granite chain of mountains had been uninterrupted; from the latter place to the second cataract at

Wady Halfa, the mountain next the river was sandstone, with the exception of some granite rocks above Tafa, extending as far as Kalabshé. At Gyrshe, two days' journey from Assouan, the plain between the river and the mountains is about a mile in width; it is a poor village, and two-thirds of the cottages were abandoned in consequence of the oppressions of the Mamelukes. At Korosko the shore widens, and a grove of date trees enlivens the banks of the Nile the whole way from hence to Ibrim. Groups of houses occur at every 100 yards; and as far as Derr the fields are as carefully cultivated as in any part of Egypt. At Derr Mr. Burckhardt alighted, as all travellers do, at the house of Hassan cachef, who enquired the object of his journey. Encouraged by the success of Messrs. Legh and Smelt, he replied that he had merely come on a tour of pleasure through Nubia, like the two gentlemen who had been at Derr before him; but his Turkish dress and manners, and his perfect knowledge of Arabic, created a suspicion in the bystanders that he was practising deception. His present to the cachef, though handsome under ordinary circumstances, appeared when contrasted with that which he had just received from Mr. Legh, to the value of about 1000 piastres, very insignificant and 'un-English.' 'Besides,' said Hassan, 'this gentleman proceeded only as far as Ibrim; whereas you give me a few trifles, and wish to go even to the second cataract!' But Burckhardt hinted that if he sent him back to Esné, and the Beg was there informed of the little attention paid to his letter of recommendation, he might be induced to levy a contribution on the merchandise of the cachef's caravan then about proceeding to Egypt: and our traveller obtained leave to proceed to Sukkot.

As far as Derr he found the eastern bank of the Nile covered with the rich deposit of the river; whereas on the western side the sands of the desert impetuously swept the very brink of the river driven by the north-west winds which prevail during the winter and spring: it is in those places only, where the sandy torrent is arrested by the mountains, that the narrow plain admits of cultivation: the eastern shore is in consequence much more populous than the western. Not far from Derr our traveller noticed a temple of the most remote antiquity. It was hewn entirely out of the sand-stone rock with its pronaos, sekos or cella, and adyton; 'the gods of Egypt,' he observes, 'seem to have been worshipped here long before they were lodged in the gigantic temples of Karnac and Gorne, which are, to all appearance, the most ancient temples in Egypt.'

The Bedouin who accompanied our traveller was of that branch of the Ababde who pasture their cattle on the banks of the river and its islands from Derr to Dongola: they are very poor; mats of the leaves of palm-trees form their tents: they do not permit their women to intermarry with the Nubians; and they have through ages preserved the purity of their race. 'They pride themselves, and justly,' says our traveller, 'in the beauty of their girls.' They are an honest and hospitable people, and of a more kindly

disposition than any of the other tribes of Nubia. The inhabitants of a small island near the village Ketta are thus described:—'These people, who all speak Arabic as well as the Noubia language, are quite black, but have nothing of the negro features. The men generally go naked, except a rag twisted round their middle; the women have a coarse shirt thrown about them. Both sexes suffer the hair of the head to grow; they cut it above the neck, and twist it all over in thin ringlets, in a way similar to that of the Arab of Souakin, whose portrait is given by Mr. Salt in lord Valentia's Travels. Their hair is very thick, but not woolly; the men never comb it, but the women sometimes do; the latter wear on the back part of the head ringlets, or a small ornament made of mother of pearl and Venetian glass beads. Both men and women grease their head and neck with butter whenever they can afford it; this custom answers two purposes; it refreshes the skin heated by the sun, and keeps off vermin.'—p. 31.

The castle of Ibrim and the inhabitants of its territory have an age who is independent of the governors of Nubia, with whom they are often at war. They are of white complexion as compared with the Nubians, and still retain the features of their ancestors, the Bosnian soldiers who were sent to garrison Ibrim by Sultan Selym. 'In no part of the eastern world,' says Mr. Burckhardt, 'have I ever found property in such perfect security as in Ibrim. The inhabitants leave the dhourra in heaps on the field without a watch during the night; their cattle feed on the banks of the river without any one to tend them; and the best parts of their household furniture are left all night under the palm-trees around the dwelling.'—But he adds 'that the Nubians in general are free from the vice of pilfering; and, what is more important, that 'travellers in Nubia have little to fear from the ill will of the peasants: it is the rapacious spirit of the governors that is to be dreaded.'

Near Wady Halfa is the second cataract of the Nile, whose noise was heard in the night at a considerable distance. This part of the river is described as very romantic: the banks, overgrown with large tamarisks, have a picturesque appearance amidst the black and green rocks, which, forming pools and lakes, expand the width of the river to more than two miles. Between this place and Sukkot the navigation is interrupted for about 100 miles by rapids, similar to that at Assouan: in some places, however, the river is tolerably free from rocks and islands; in these its bed is narrow, and its banks are high; near Mershed, Mr. Burckhardt says, 'I could throw a stone over to the opposite side.' At Wady Seras our traveller put up for the night at a hut of Kerrarish Arabs, who were watching the produce of a few cotton fields, and bean plantations. They had not tasted bread for the last two months. Burckhardt made them a present of some dhourra, on condition of their letting the women (who are seldom permitted to enjoy this luxury) partake of it with them; the latter immediately set to work to grind it between two granite stones; 'and the girls sat up eating and singing the whole night.' The mountain

crossed by our traveller to the southward of Seras was of granite and quartz. The Arabs, who act as guides in these desolate mountains, have devised a singular mode of extorting presents from the traveller. They first beg a present; if refused, they collect a heap of sand, and, placing a stone at each extremity of it, they apprise the traveller that his tomb is made. Before he got out of this mountainous district Mr. Burckhardt had a practical proof of this custom: having refused to give any thing to one of these grave-diggers, the man set about making his sand-heap; upon this our traveller alighted and began another, observing, that 'as they were brethren, it was but just that they should be buried together.' The fellow laughed; and they mutually agreed to destroy each other's labors: on Burckhardt's remounting his horse, the disappointed Arab gravely observed from the koran, 'No mortal knows the spot upon earth where his grave shall be digged.' At Wady Okame the dominions of the governor of Sukkot begin, and the country opens out on each side of the river. Having a letter of recommendation from Hassan cachef to the governor of Sukkot, who resides at Kolbe, an island in the Nile, Mr. Burckhardt crossed over in a kind of ferry-boat called a ramous. It consists of the trunks of date trees loosely tied together, and worked by a paddle about four feet in length, forked at the upper extremity, and lashed to the raft by ropes of straw. Its close resemblance to those represented on the walls of the Egyptian temples shows that man, here at least, has not been an improving animal.

The district of Say begins at Aamara, on the plain of which are the ruins of a fine Egyptian temple. The shafts of six large columns of calcareous stone remain, being the only specimen to be met with of that material, those of Egypt being all of sandstone. Mr. Hamilton has observed, that 'the ancient Egyptians do not appear to have employed granite in any of their buildings in Upper Egypt, except in the obelisks and some few of their propylæa.' The castle of Say is built of alternate layers of stone and brick, on an island of the Nile, and, like Ibrim and Assouan, has its own aga, independent of the governors of Nubia; like these, too, its territories are inhabited by the descendants of Bosnian soldiers. Beyond Say, thick groves of date trees and numerous habitations crowded both banks of the river. 'The dates of Sukkot and Say are preferred to those of Ibrim, and are considered superior to all that grow on the banks of the Nile, from Sennaar down to Alexandria; they are of the largest kind, generally three inches in length.'

Burckhardt, on the 13th of March, reached the territory of Mahass, and passed several villages the houses of which were constructed of mats of palm-leaves. The castle of Tinareh had been seized by a rebel cousin of the king of Mahass, but having been besieged for several weeks by the two brothers Hosseyn and Mohammed cachefs, it had capitulated the evening preceding his arrival. He visited the camp of the latter, the son on the mother's side of a Darfur slave, but without any of that mildness which generally

characterises the negro countenance.—'He rolled his eyes at me,' says our traveller, 'like a madman, and, having drunk copiously of palm-wine at the castle, he was so intoxicated that he could hardly keep on his legs.' Goat skins of palm-wine were brought in, and in the course of half an hour the whole camp was as drunk as their chief. Muskets succeeded; and a feu-de-joie was fired with ball in the hut where all were sitting. 'I must confess,' says Burckhardt, 'that at this moment I repented of having come to the camp.' At length, however, the whole party dropped asleep, and a few hours brought the cachef to his senses, so that he could talk rationally. Burckhardt's situation, however, was not much improved. He was suspected of being an agent of the pasha of Egypt;—'But,' said the cachef's Arabic secretary, 'at Mahass we spit at Mohammed Aly's beard, and cut off the heads of those who are enemies to the Mamelukes.'

'I was now,' says our traveller, 'without a friend or protector, in a country only two days and a half distant from the northern limits of Dongola, the newly conquered kingdom of the Mamelukes, against whose interests I was suspected to be acting, while the governors of Mahass supported them.' Under these circumstances he prudently determined to return; but the cachef abruptly ordered him to stay till next day. Burckhardt however expressed his anxiety to reach Derr as speedily as possible, and was dismissed with the usual mixture of insult and contempt.

At the village of Kolbe our traveller obtained a ramous for the baggage, and he and his guide swam the river at the tails of their camels, each beast having an inflated goat skin tied to its neck. He now availed himself of the opportunity of examining, in his way down, the hitherto undiscovered temple of Ipsambul. The six colossal figures in front he found to represent juvenile persons; they are placed in narrow recesses, three on each side of the entrance; their height from the ground to the knee is about six feet and a half. The spaces of the smooth rock between the niches are covered with hieroglyphics, as are also the walls of the apartments. This temple Mr. Burckhardt thinks to have been the model of that at Derr, but much anterior to it in point of time. On the side of the mountain facing the north, against which there was a vast accumulation of sand, and at a distance of about 200 yards from the temple, the upper parts were discovered of four immense colossal statues cut out of the living rock, all the other parts being buried beneath the sands, which are drifted here in torrents from the desert. The head of one of these statues was yet above the surface; and, says our author, 'it has a most expressive youthful countenance, approaching nearer to the Grecian model of beauty than that of any ancient Egyptian figure I have seen; indeed, were it not for a thin oblong beard, it might well pass for a head of Pallas.'—'This statue,' he adds, 'measures seven yards across the shoulders, and cannot therefore, if in an upright posture, be less than sixty-five or seventy feet in height! the ear is one yard and four

inches in length.' Mr. Burckhardt conjectured, that if the sand could be cleared away, an immense temple would be discovered, to the entrance of which the four colossal figures served as ornaments, in the same manner as the six belonging to the neighbouring temple of Isis; and he concluded, from a hawk-headed figure surmounted by a globe, in the centre of the four statues, that this buried temple had been dedicated to Osiris. It was this conjecture that induced Belzoni to undertake the bold enterprise of uncovering it as far down as the doorway, which he effected, with the able assistance and personal exertions of captains Mangles and Irby, of the royal navy. Mr. Burckhardt does not hesitate to pronounce the works of Ipsambul to belong to the finest period of Egyptian sculpture.

The account given by Belzoni and his associates of these extraordinary temples, sculptured out of a whole mountain, induced Mr. Bankes to make a visit here in company with Mr. Salt, to explore these sacred recesses more minutely. For the fatigue and expense of this enterprise, and the exertions of a month in removing the sand, and excavating the rubbish, &c., they were amply rewarded by many new and brilliant discoveries; among the first of which must be reckoned that of a Greek inscription on the leg of one of the colossal statues which guards the entrance, recording the visit of Psammetichus (spelt **ΨΑΜΜΑΤΙΧΟΣ** in the dative, and written in very ancient letters), which, from appearances, it was judged must have been engraved when the temple was already encumbered with sand.

'This is probably,' says the Quarterly Review, 'the most ancient inscription that exists in any intelligible language, as Psammetichus died more than 600 years before Christ—more than 100 years before the conquest of Egypt by Cambyses the Persian—and nearly 200 years before the visit of Herodotus to that country. It is invaluable as an additional corroboration of the truth and accuracy of the Father of Profane History, from whom we learn that this Psammetichus was one of the twelve princes who ruled Egypt; that by the assistance of some Ionians and Carians—'men of brass'—he subdued his eleven associates, and became sole sovereign of the country; that in return for this service they had lands assigned to them, and that they taught the Greek language to the Egyptian youth. 'This inscription is valuable,' adds the above writer, 'in another point of view, as it may assist, with the corresponding hieroglyphics, to decypher those mysterious characters; and it is peculiarly valuable as an undoubted specimen of the advanced state of the arts among the ancient Egyptians; for the temple of Ipsambul is said to contain the finest examples of sculpture, of painting, and of design, now existing either in Nubia or in Egypt. By a new and ingenious contrivance for giving light within the temple, Mr. Bankes made out the complete historical design on the wall of one of the chambers, in which, besides the usual delineations of fortresses, war-chariots, &c., he observed three horsemen mounted without saddles, but with regular bridles.'

Belzoni's subsequent operations may be here briefly detailed. After eighteen days' hard labor he and his boat's crew arrived at the door-way of that temple, which Mr. Belzoni considers as 'the finest and most extensive excavation in Nubia, and one that can stand a competition with any in Egypt, except the tomb newly discovered in Beban-el-Molook.' As the temple of Ipsambul has, in all probability, been covered with sand 2000 years, or more, our readers will not be displeased with the description of it.

'From what we could perceive, at the first view, it was evidently a very large place; but our astonishment increased when we found it to be one of the most magnificent of temples, enriched with beautiful intaglios, painting, colossal figures, &c. We entered at first into a large pronaos, fifty-seven feet long and fifty-two wide, supported by two rows of square pillars, in a line from the front door to the door of the sekos. Each pillar has a figure, not unlike those at Medinet Aboo, finely executed, and very little injured by time. The tops of their turbans reach the ceiling, which is about thirty feet high; the pillars are five feet and a half square. Both these and the walls are covered with beautiful hieroglyphics, the style of which is somewhat superior, or at least bolder, than that of any others in Egypt, not only in workmanship, but also in the subjects. They exhibit battles, storming of castles, triumphs over the Ethiopians, sacrifices, &c. In some places is to be seen the same hero as at Medinet Aboo, but in a different posture. Some of the columns are much injured by the close and heated atmosphere, the temperature of which was so hot that the thermometer must have risen to above 130°. The second hall is about twenty-two feet high, thirty-seven wide, and twenty-five and a half long. It contains four pillars about four feet square: and the walls of this also are covered with fine hieroglyphics in pretty good preservation. Beyond this is a shorter chamber, thirty-seven feet wide, in which is the entrance into the sanctuary. At each end of this chamber is a door, leading into smaller chambers in the same direction with the sanctuary, each eight feet by seven. The sanctuary is twenty-three feet and a half long, and twelve feet wide. It contains a pedestal in the centre and at the end four colossal sitting figures, the heads of which are in good preservation, not having been injured by violence. On the right side of this great hall, entering into the temple, are two doors, at a short distance from each other, which lead into two long separate rooms, the first thirty-eight feet ten inches in length, and eleven feet five inches wide; the other forty-eight feet seven inches, by thirteen feet three. At the end of the first are several unfinished hieroglyphics, of which some, though merely sketched, give fine ideas of their manner of drawing. At the lateral corners of the entrance into the second chamber from the great hall is a door, each of which leads into a small chamber twenty-two feet six inches long, and ten feet wide. Each of these rooms has two doors leading into two other chambers, forty-three feet in length, and ten feet eleven inches wide. There are two benches in them, apparently to sit on.

The most remarkable subjects in this temple are, 1st, a group of captive Ethiopians, in the western corner of the great hall: 2dly, the hero killing a man with his spear, another lying slain under his feet, on the same western wall: 3dly, the storming of a castle, in the western corner from the front door.—pp. 211—213.

Such is the interior. The description of the exterior follows:—

‘The outside of this temple is magnificent. It is 117-feet wide, and eighty-six feet high; the height from the top of the cornice to the top of the door being sixty-six feet six inches, and the height of the door twenty feet. There are four enormous sitting colossi, the largest in Egypt or Nubia, except the great sphinx at the pyramids to which they approach in the proportion of near two-thirds. From the shoulder to the elbow they measure fifteen feet six inches; the ears three feet six inches; the face seven feet; the beard five feet six inches; across the shoulders twenty-five feet four inches; their height is about fifty-one feet, not including the caps, which are about fourteen feet. There are only two of these colossi in sight, one is still buried under the sand, and the other, which is near the door, is half fallen down, and buried also. On the top of the door is a colossal figure of Osiris twenty feet high, with two colossal hieroglyphic figures, one on each side, looking towards it. On the top of the temple is a cornice with hieroglyphics a torus and a frieze under it. The cornice is six feet wide, the frieze is four feet. Above the cornice is a row of sitting monkeys eight feet high, and six across the shoulders. They are twenty-one in number. This temple was nearly two-thirds buried under the sand, of which we removed thirty-one feet before we came to the upper part of the door. It must have had a very fine landing-place, which is now totally buried under the sand. It is the last and largest temple excavated in the solid rock in Nubia or Egypt, except the new tomb.—p. 213, 214. Mr. Belzoni observes that the heat on first entering this temple was so great that they could scarcely bear it, and the perspiration from their hands was so copious as to render the paper by its dripping unfit for use. On the first opening that was made by the removal of the sand, the only living object that presented itself was a toad of prodigious size. The inanimate objects within were the figures of two lions with hawks’ heads, as large as life, and a small sitting human figure.

Opposite to Derr Burckhardt fell in on his return with Hassan cachef, who told him that he had no business in Mahass, and seemed surprised that his brothers had suffered him to proceed thither. Here he witnessed one of those wanton acts of despotism which are but too common in the east. ‘In walking over a large field, with about thirty attendants and slaves, Hassan told the owner that he had done wrong in sowing the field with barley, as water-melons would have grown better. He then took some melon seed out of his pocket, and giving it to the man, said, ‘you had better tear up the barley and sow this.’ As the barley was nearly ripe, the man of course excused himself from complying with the cachef’s command: ‘Then I

will sow them for you,’ said the latter; and ordered his people immediately to tear up the crop, and lay out the field for the reception of the melon seed. The boat was then loaded with the barley, and a family thus reduced to misery, in order that the governor might feed his horses and camels for three days on the barley stalks.’ None of the numerous temples nor of their inscriptions escaped Mr. Burckhardt’s notice, on his return by the western bank of the Nile. Those of Dakke, Gyrshe, Dondour, Kalabshe, Tafa, Kardassy, Debot, are all particularly described, and the comparative excellence of each characterised: but our space forbids extracting his able delineation.

On the evening of the 30th of March, after a hazardous journey of thirty-five days, in which he had rested only one day, Mr. Burckhardt returned to Assouan, having travelled generally at the rate of ten hours a day. What follows is a remarkable feature of this enterprize: ‘I put,’ says he, ‘eight Spanish dollars into my purse, in conformity with the principle I have constantly acted upon, namely, that the less the traveller spends while on his march, and the less money he carries with him, the less likely are his travelling projects to miscarry; and I returned,’ he adds, ‘after a journey of 900 miles, with three dollars, having spent about five dollars, including every expense, except the present to Hassan cachef.’

As no caravan for Eastern Africa set out in the year after his return, Mr. Burckhardt remained quiet at Esnè; he kept no company, dressed himself in the poorest garb of an inhabitant of Egypt; and, in order to conceal his real character more effectually, spent as little money as possible, the amount of his daily expenses, of his servant, dromedary, and ass, being about eighteen-pence, and that of his horse sixteen-pence a month. Yet with all these precautions he was not free from the suspicion of possessing some hidden treasure. Here, however, he remained, till the end of February, when a caravan being on the point of starting from Daraou (three days’ journey to the northward of Esnè), for the confines of Sennaar, he determined to accompany it, and to try his fortune in this new route unattended by any servant.

Our limits will not permit us to trace the route pursued by the caravan. It was on the eastern side of the Nile, but at a great distance from it, being the chord of that great bend of the river to the westward in which Dongola is situated, and the extremities of which are not far removed from Assouan on the north and Berber on the south: it is, in fact, the precise route which was taken by Bruce on his return from Abyssinia. It lies over a perfect desert, except where those numerous wadys, or valleys, in the ridge of mountains on the left, open upon the plain, and in which alone trees, shrubs, and grass, are to be found for the cattle of the caravans, and wells or rills of fresh water. The scarcity of this article is sometimes severely felt; but when calamitous accidents occur, as they occasionally do, Mr. Burckhardt seems to think they happen either from taking circuitous routes, or neglecting to fill an adequate number of

water-skins. The extraordinary sufferings of Mr. Bruce in this desert he conceives to be greatly exaggerated in the relation; at the same time he adds, 'I cannot but sincerely admire the wonderful knowledge of men, firmness of character, and promptitude of mind, which furnished Bruce with the means of making his way through these savage and inhospitable nations, as a European. To travel as a native has its inconveniences and difficulties; but I take those which Bruce encountered to be of a nature much more intricate and serious, and such as a mind at once courageous, patient, and fertile in expedients, could alone have surmounted.'

The wady of Berber consists of four villages situated on the Sandy Desert, about half an hour's walk from the Nile. Each is composed of several quarters, independent of one another; the houses are also separated by court-yards, so that there are no regular streets. They are built of mud, or sun-baked bricks. The rooms all open into the court-yard; two of them are usually occupied by the family, a third serves as a store room, a fourth for the reception of strangers, and a fifth for less laudable purposes. An oblong frame of wood with four legs, with a seat of thin stripes of ox-leather drawn across, is the principal article of furniture; this is called *angareyy*, and answers the double purpose of a sofa by day and a bed by night. Mats of reeds or carpets of leather, without any pillow, are their only bedding. He gives a dreadful picture of the immoral habits of all classes here.

Part of the caravan, and with it Mr. Burckhardt, left Berber on the 7th of April, and proceeded towards Shendy. They soon reached Ras al Wady, the principal village in the dominions of another mek of the name of Hanoze. This sublime personage detained them from morning till late in the evening, without sending them any food, and they could not venture to taste their own, as they were now considered as his guests. The mek himself kept out of sight, but his son came to the caravan to beg some presents. The great man made his appearance, however, the following day, quite naked, with the exception of a towel round his loins, and attended by six or eight slaves, one of whom carried his water-flask, another his sword, and a third his shield. Seeing a fine ass, he ordered his hopeful son to mount it; and, notwithstanding the resistance of its owner, the animal was trotted off to the mek's stable: the caravan was then permitted to depart. At the end of four hours' travelling they reached the river Mogren (not Mareb, as Bruce calls it), the bed of which was nearly dry; but the banks, being covered with fresh herbage and tamarisk bushes, afforded a delightful prospect after the passage of a long and dreary desert. They soon reached the district of Damer, the character of whose inhabitants is just the reverse of that of the Berbers. The town of Damer contains about 500 houses, all neat and uniformly built in regular streets, and inhabited by a tribe of Arabs, the greater part of whom are Fokera, or religious men. They have a pontiff called El Faky el Kebir (the great Faky), who is their chief and judge. Damer has acquired reputation for its schools, to which young men are sent from Dar-

four, Sennaar, Kordofan, and other parts of Soudan, to study the law.

The caravan remained here five days, and, setting out on the 15th of April, reached Shendy on the 18th. Next to Sennaar and Cobbé in Darfour, Shendy is the largest town in eastern Soudan; it consists of several quarters, divided from each other by public market-places, and contains from 800 to 1000 houses, similar to those of Berber. Those of the chief and his relatives have court-yards twenty feet square, enclosed by high walls. The name of the mek is Nimr, or the Tiger. He holds his mekship in right of his mother, who was of the Sennaar tribe, which explains Bruce's account of his having found a woman (Settina, our lady) on the throne. Three different tribes of Arabs inhabit the country of Shendy, besides that to which the mek's wife belongs, and their dissensions among themselves assist materially in the preservation of his authority. As merchandise pays no duty at Shendy, it has become a place of flourishing trade. It is a very large market for slaves.

As a visit to Mecca at the time of the pilgrimage, in order to obtain the title of Hadji (the most powerful recommendation and best protection in any future journey into the interior of Africa), had been the principal motive of our traveller's second journey into Nubia, he set about his preparations for the journey. With this view he sold his little stock of merchandise at Shendy, purchased a slave-boy for sixteen dollars, a camel for eleven, and, after laying in a stock of dhourra meal, butter, and dammour, found he had just four dollars remaining; which he calculated would suffice to carry him to Djidda, on which place he had a letter of credit from Cairo. Thus prepared he joined the caravan for Suakin, by the route of Taka; and here we must leave him for the present. See TAKA.

Twice the serab or mirage appeared to them in crossing this desert, but somewhat different from what had been observed in Egypt. Its color was of the purest azure, and so clear that the shadows of the mountains which bordered the horizon were reflected on it with the greatest precision, and the delusion of its being a sheet of water was thus rendered still more perfect. I had often seen the mirage in Syria and Egypt, but always found it of a whitish color, rather resembling a morning mist, seldom lying steady on the plain, but in continual vibration, but here it was very different, and had the most perfect resemblance to water. The great dryness of the air and earth in this desert may be the cause of the difference. The appearance of water approached also much nearer than in Syria and Egypt, being often not more than 200 paces from us, whereas I had never seen it before at a distance of less than half a mile. There were at one time about a dozen of these false lakes round us, each separated from the other, and for the most part in the low grounds.

To avoid a notorious robber, their Arab guide, in taking them an unfrequented path, lost his way. What follows is highly interesting:—

After five days march in the mountains, their stock of water was exhausted, nor did they know where they were. They resolved, therefore, to

direct their course towards the setting sun, hoping thus to reach the Nile. After two days thirst, fifteen slaves and one of the merchants died. Another of them, an Ababde, who had ten camels with him, thinking that the camels might know better than their masters where water was to be found, desired his comrades to tie him fast upon the saddle of his strongest camel, that he might not fall down from weakness; and thus he parted from them, permitting his camels to take their own way: but neither the man nor his camels were ever heard of afterwards. On the eighth day after leaving Owareyk, the survivors came in sight of the mountains of Shigre, which they immediately recognised, but their strength was quite exhausted, and neither men nor beasts were able to move any farther. Lying down under a rock, they sent two of their servants with the two strongest remaining camels, in search of water. Before these two men could reach the mountain, one of them dropped off his camel, deprived of speech, and able only to wave his hands to his comrade as a signal that he desired to be left to his fate. The survivor then continued his route, but such was the effect of thirst upon him, that his eyes grew dim and he lost the road, though he had often travelled over it before, and had been perfectly acquainted with it. Having wandered about for a long time, he alighted under the shade of a tree, and tied the camel to one of its branches; the beast, however, smelt the water (as the Arabs express it), and, wearied as it was, broke its halter, and set off galloping furiously in the direction of the spring, which, as it afterwards appeared, was at half an hour's distance. The man, well understanding the camel's action, endeavoured to follow its footsteps, but could only move a few yards; he fell exhausted on the ground, and was about to breathe his last, when Providence led that way from a neighbouring encampment a Bisharye Bedouin, who, by throwing water upon the man's face restored him to his senses. They then went hastily together to the water, filled the skins, and, returning to the caravan, had the good fortune to find the sufferers still alive. The Bisharye received a slave for his trouble. My informer, a native of Yembo, in Arabia, was the man whose camel discovered the spring, and he added the remarkable circumstance that the youngest slaves bore the thirst better than the rest, and that, while the grown up boys all died, the children reached Egypt in safety. On the 23rd of March the caravan arrived at Berber, having taken twenty-two days in crossing the desert from Daraou to that place.

NUBILE, *adj.* French, *nubile*; Latin, *nubilis*. Marriageable; fit for marriage.

The cowslip smiles, in brighter yellow drest,
Than that which veils the *nubile* virgin's breast.

Pope.

NUCLEUS, *n. s.* Lat. *nucleus*. A kernel; any thing about which matter is gathered or concentrated.

The crusts are each in all parts nearly of the same thickness, their figure suited to the *nucleus*, and the outer surface of the stone exactly of the same form with that of the *nucleus*.

Woodward.

NUCTA, a dew, which, falling in Egypt about

St. John's day, is by the superstitious natives considered as miraculous, and the peculiar gift of that saint. It is occasioned by the rains which at this period fall in Ethiopia. The Nile at this season is almost stagnant, and in many of its cisterns putrid; but, when it is augmented by these showers, the sun resumes its suspended power of disengaging this light vapor, which never fails to put an immediate stop to the plague, that is but too frequently raging.

NUDDEA (Navadwipa, the New Island), is a large district in the province of Bengal, situated between 22° and 24° of N. lat. It is bounded on the north by Raujishy; on the south by Hooghly and the Sunderbunds; to the east by Jessore; and on the west it is separated from Burdwan by the Hooghly River. In ancient records this district is called Oukerah; but more recently Kishenagur, from the zemindar who held it. In the beginning of the eighteenth century it was bestowed on Ragooram, a Brahmin, ancestor of the present family. This district is fertile in all the more valuable productions of India. It enjoys, besides, the easy and quick navigation of the Hooghly, the Jellinghy, and the Issamutty; yet the revenue is said to bear no comparative proportion to that of the adjacent district of Burdwan. In 1784, by major Rennell's mensuration, this district contained 3115 square miles; the chief towns are Kishenagur, Nuddeah, and Santipoor. Inhabitants about 764,000, in the proportion of two Mahometans to seven Hindoos.

NUDDEA, a town in the province of Bengal, capital of the district of Nuddeah, is situated at the Jellinghy and Cossimbazar rivers with the Hooghly, sixty miles north from Calcutta. It was the capital of a Hindoo principality anterior to the Mogul conquest of Hindostan. A.D. 1204 it was destroyed by Mahommed Bukhtyar Khiljee, the first Mahometan invader of Bengal. In modern times it has been the seat of a Brahmin seminary.

NU'DITY, *n. s.* French, *nudité*; Lat. *nudus*. Naked parts; nakedness.

There are no such licenses permitted in poetry, any more than in painting, to design and colour obscene *nudities*. *Dryden.*

The world's all face; the man who shews his heart

Is hooted for his *nudities* and scorned. *Young.*

NUGATION, *n. s.* } Lat. *nugor*. The act
NUGATORY, *adj.* } or practice of trifling: idle; futile.

The opinion, that putrefaction is caused either by cold, or peregrine and preternatural heat, is but *nugation*. *Bacon.*

Some great men of the last age, before the mechanical philosophy was revived, were too much addicted to this *nugatory* art, when occult quality, and sympathy and antipathy were admitted for satisfactory explications of things. *Bentley.*

NUGENT (Thomas), F.S.A. and LL.D., an ingenious miscellaneous writer and compiler, was born in Ireland, and died in London April 27th, 1772. In 1765 he obtained his diploma from the university of Aberdeen. Among his publications are, *Travels through Germany*, 1768, 2 vols. 8vo.; *Observations on Italy and its Inhabitants*, 1769, 2 vols. 8vo.; and a popular French and English

dictionary. He translated Henault's Chronological Abridgment of the History of France; the Life of Benvenuto Cellini; and various other works.

NUGENT (Christopher), M.D., F.R.S., was a native of Ireland, and father-in-law of Mr. Burke. He published An Essay on Hydrophobia, and practised with reputation as a physician in the metropolis. He died November 12th, 1775.

NUISANCE, *n. s.* Fr. *nuisance*. See NOIANCE. Something noxious or offensive.

Nuisances, as necessary to be swept away, as dirt out of the streets. *Kettlewell.*

This is the liar's lot: he is accounted a pest and a nuisance; a person marked out for infamy and scorn. *South.*

A wise man who does not assist with his counsels, a rich man with his charity, and a poor man with his labour, are perfect nuisances in a commonwealth. *Swift's Miscellanies.*

The encroaching nuisance asks a faithful hand, Patient, affectionate, of high command, To check the procreation of a breed Sure to exhaust the plant on which they feed. *Cowper.*

NUISANCE, in law. Nuisances are either public or private. A public nuisance is an offence against the public in general, either by doing what tends to the annoyance of all the king's subjects, or by neglecting to do what the common good requires: in which case all annoyances and injuries to streets, highways, bridges, and large rivers, as also disorderly alehouses, bawdy-houses, gaming-houses, stages for rope-dancers, &c., are held to be common nuisances. A private nuisance is when only one person or family is annoyed by the doing of any thing; as where a person stops up the light of another's house, or builds in such a manner that the rain falls from his house upon his neighbour's.

NULL, *v. a., adj., & n. s.* } Lat. *nullus*. To
NUL'LIFY, *v. a.* } make void; annul;
NUL'LITY, *n. s.* } annihilate: void,
ineffectual: something of no power or significance: to nullify is also to annul; make void: nullity, synonymous with null as a noun substantive, but a better word.

Their orders are accounted to be null and invalid by many. *Lesley.*

If part of the people be somewhat in the election, you cannot make them nulls or ciphers in the privation or translation. *Bacon.*

A hard body, struck against another hard body, will yield an exteriour sound, in so much as if the percussion be over soft it may induce a nullity of sound; but never an interior sound. *Id.*

Thy fair enchanted cup, and warbling charms, No more on me have power, their force is null'd. *Milton.*

With what impatience must the muse behold The wife, by her procuring husband sold! For tho' the law makes null the adulterous deed Of lands to her, the cuckold may succeed. *Dryden.*

Reason hath the power of nulling or governing all other operations of bodies. *Grew's Cosmologia.*

It can be no part of my business to overthrow this distinction, and to shew the nullity of it; which has been solidly done by most of our polemick writers. *South.*

The jurisdiction is opened by the party, in default of justice from the ordinary, as by appeals or nullities. *Ayliffe.*

The pope's confirmation of the church lands, to those who hold them by king Henry's donation, was null and fraudulent. *Swift.*

By such a change thy darkness is made light, Thy chaos order, and thy weakness might; And He, whose power mere nullity obeys, Who found thee nothing, formed thee for his praise. *Cowper.*

NUMA (Pompilius), the second king of Rome, and the fourth son of Pompilius Pompo, an illustrious Sabine. He had married Tatia, the daughter of king Tadius, and with her remained in his native country, preferring the tranquillity of a private life to the splendor of a court. Upon the death of his wife, with whom he had lived thirteen years, he gave himself up entirely to study; and, leaving the city of Cures, confined himself to the country, in search only of those woods and fountains which religion had made sacred. His recluse life gave rise to the fable, which was very early received among the Sabines, that Numa lived in familiarity with the nymph Egeria. (See EGERIA.) Upon the death of Romulus, the senate and people of Rome despatched Julius Proculus and Valerius Volesus, two senators of distinction, to make him an offer of the kingdom. The Sabine philosopher rejected at first their proposal; but at last yielded, and set out for Rome, where he was received by all ranks of people with joy. Spurius Vettius, the interrex for the day, having assembled the curiæ, he was elected in due form, and the election was unanimously confirmed by the senate. The beginning of his reign was popular; and he dismissed the 300 guards which his predecessor had kept around his person. He was not, like Romulus, fond of war, but applied himself to tame the ferocity of his subjects, to inculcate in their minds a reverence for the Deity, and to quell their dissensions by dividing all the citizens into classes. He established different orders of priests, and taught the Romans not to worship the Deity by images, and hence none appeared in the temples of Rome for 160 years. He encouraged the report of his paying visits to the nymph Egeria, to give sanction to the laws which he introduced. He established the college of the vestals, and told the Romans that the safety of the empire depended upon the preservation of the sacred ancyle or shield, which, it was believed, had dropped from heaven. He dedicated a temple to Janus, which, during his whole reign, remained shut as a mark of peace. After a reign of forty-two years, in which he had given every encouragement to the useful arts, Numa died A. U. C. 82. Not only the Romans, but the neighbouring nations, were eager to pay their last offices to a monarch whom they revered. He left behind him one daughter, called Pompilia, who married Numa Marcius, and became the mother of Ancus Marcius, the fourth king of Rome.

NUMANTIA, a very noble city, the ornament of Hispania Citerior (Florus), celebrated for the long war of twenty years which it maintained against the Romans. Numantia was taken by the Romans, A. U. C. 629, after a siege, productive of hardships to the inhabitants unparalleled in history. See ROME.

NUMB, *adj.* & *v. a.* } Saxon, *benum*, be-
 NUMBNESS, *n. s.* } numb'd; Gothic and
 NUMBNESS. } Arm. *num*. Torpid;
 motionless; senseless; hence chill or cold to
 torpidity: to numb is to reduce to this state.

When we both lay in the field,
 Frozen almost to death, how he did lap me
 Even in his garments, and did give himself
 All thin and naked to the numb-cold night.

Shakespeare.

Bedlam beggars, with roaring voices
 Strike in their numb'd and mortified bare arms
 Piss, wooden pricks, nails, sprigs of rosemary:
 And with this horrible object, from low farms,
 Inforce their charity. *Id. King Lear.*

Stir, nay, come away;

Bequeath to death your numbness; for from him
 Dear life redeem you. *Id. Winter's Tale.*

Leaving long upon any part maketh it numb and
 asleep; for that the compression of the part suffereth
 not the spirits to have free access; and therefore,
 when we come out of it, we feel a stinging or prick-
 ing, which is the re-entrance of the spirits. *Bacon.*

Cold numbness straight bereaves

Her corpse of sense, and the' air her soul receives.
Denham.

She can unlock

The clasping charm, and thaw the numbing spell.
Milton.

Till length of years,

And sedentary numbness, craze my limbs
 To a contemptible old age obscure. *Id.*

Plough naked, swain, and naked sow the land,
 For lazy winter numbs the labouring hand. *Dryden.*

Silence is worse than the fiercest and loudest ac-
 cusions; since it may proceed from a kind of numb-
 ness or stupidity of conscience, and an absolute do-
 minion obtained by sin over the soul, so that it shall
 not so much as dare to complain, or make a stir.

South.

Nought shall avail,

The pleasing song, or well repeated tale,
 When the quick spirits their warm march forbear,
 And numbing coldness has embraced the ear. *Prior.*

If the nerve be quite divided the pain is little,
 only a kind of stupor or numbness.

Wiseman's Surgery.

NUMBER, *v. a.* & *n. s.* } Fr. *nombre*; Lat.

NUMBERER, *n. s.* } *numero*. To count;

NUMBERLESS, *adj.* } reckon; reckon as

one of a kind or sort: a number is the species
 of a quality; any particular aggregate of things;
 many; a multitude, considered in the aggregate;
 harmony (proportions or varieties of sound re-
 duced to numbers), poetry, verse; in grammar,
 the variation that denotes quantity, as one, or
 more than one: a numberer is he who numbers:
 numberless, without number; innumerable.

If a man can number the dust of the earth, then
 shall thy seed also be numbered. *Genesis xiii.*

He was numbered with the transgressors, and bare
 the sin of many. *Isaiah liii. 12.*

I will number you to the sword. *Id. lxx. 12.*

The silver, the gold, and the vessels, were weighed
 by number and by weight. *Ezra viii. 34.*

Of him came nations and tribes out of number.

2 Esd. iii. 7.

Much of that we are to speak may seem to a num-
 ber perhaps tedious, perhaps obscure, dark, and intri-
 cate. *Hooker.*

Hye thee from this slaughter-house,
 Lest thou increase the number of the dead.

Shakespeare.

This is the third time; I hope good luck lies in
 odd numbers; they say there is divinity in odd num-
 bers, either in nativity, chance, or death.

Id. Merry Wives of Windsor.

How many numbers is in nouns?

—Two.

Id.

I forgive all;

There cannot be those numberless offences
 'Gainst me. *Shakespeare.*

Number itself importeth not much in armies, where
 the people are of weak courage: for, as Virgil says,
 it never troubles a wolf how many the sheep be.

Bacon.

If you will some few of you shall see the place;
 and then you may send for your sick, and the rest of
 your number, which ye will bring on land.

Bacon's New Atlantis.

Sir George Summers, sent thither with nine ships
 and five hundred men, lost a great part of their num-
 bers in the isle of Bermudaz. *Heylin.*

The chances and contingencies that trouble us
 are no more to be numbered than the minutes of
 eternity. *Jer. Taylor*

Deserts so great,

Though numberless, I never shall forget. *Denham.*
 Loud as from numbers without number. *Milton.*

Then feed on thoughts that voluntary move,
 Harmonious numbers, as the wakeful bird
 Sings darkling. *Id.*

About his chariot numberless were poured
 Cherub and seraph. *Id. Paradise Lost.*

As one diamond is worth numberless bits of glass:
 so one solid reason is worth innumerable fancies.

Barrow.

In the noun is the variation or change of termina-
 tion to signify a number more than one. When men
 first invented names, their application was to single
 things; but, soon finding it necessary to speak of
 several things of the same kind together, they found
 it likewise necessary to vary or alter the noun.

Clarke's Latin Grammar.

Ladies are always of great use to the party they
 espouse, and never fail to win over numbers.

Addison.

The soul converses with numberless beings of her
 own creation. *Id. Spectator.*

Some convey their instructions to us in the best
 chosen words, others in the most harmonious num-
 bers, some in point of wit, and others in short pro-
 verbs. *Addison.*

Yet should the muses bid my numbers roll
 Strong as their charms, and gentle as their soul.

Pope.

Travels he then a hundred leagues,

And suffers numberless fatigues.

Swift's Miscellanies.

Could I, from Heaven inspired, as sure presage
 To whom the rising year shall prove his last,
 As I can number in my punctual page,

And item down the victims of the past. *Cowper.*

The numberless suckers and straggling branches of
 a fruit tree, if permitted to shoot out unrestrained,
 while they are themselves barren and useless, dimi-
 nish considerably the vigour of the parent stock.

Canning.

NUMBER. (See ARITHMETIC.) Number, says
 Malcolm, is either abstract or applicate: Ab-
 stract, when referred to things in general, without
 attending to their particular properties; and ap-
 plicate, when considered as the number of a par-
 ticular sort of things, as yards, trees, or the like.
 When particular things are mentioned, there is
 always something more considered than barely
 their numbers; so that what is true of number

in the abstract, or when nothing but the number of things is considered, will not be true when the question is limited to particular things: for instance, the number two is less than three; yet two yards is a greater quantity than three inches; because regard must be had to their different natures as well as number, whenever things of a different species are considered; for, though we can compare the number of such things abstractedly, yet we cannot compare them in any applicable sense. And this difference is necessary to be considered, because upon it the true sense, and the possibility or impossibility, of some questions depend. Number is unlimited in respect of increase; because we can never conceive a number so great but still there is a greater. However, in respect of decrease, it is limited; unity being the first and least number, below which therefore it cannot descend, except by subdivision into decimal or other parts, which may also be extended infinitely, at least in idea, if not in fact; for we cannot conceive any particle of matter so small, but that it may be supposed capable of being rendered still smaller, by division and subdivision.

NUMBER, GOLDEN. See CHRONOLOGY, Index.

NUMBERS, ANCIENT. Numbers were by the Jews, as well as the ancient Greeks and Romans, expressed by letters of the alphabet: hence we may conceive how imperfect and limited their arithmetic was, because the letters could not be arranged in a series, or in different columns, convenient for ready calculation. The invention of the arithmetical figures which we now make use of, and particularly the cypher, has given us a vast advantage over the ancients in this respect. (See ARITHMETIC, Index.) The Jewish cabbalists, the Grecian conjurers, and the Roman augurs, had a great veneration for particular numbers, and the result of particular combinations of them.

NUMBERS, BOOK OF, the fourth book of the Pentateuch, taking its denomination from its numbering the families of Israel. A great part of this book is historical, relating to several remarkable passages in the Israelites' march through the wilderness. It contains a distinct relation of their several movements from one place to another, or their forty-two stages through the wilderness. But the greatest part of this book is spent in enumerating those laws and ordinances, whether civil or ceremonial, which were given by God, but not mentioned before in the preceding books.

NUM'ERAL, *adj.*

NUM'ERABLE,

NUM'ERALLY, *adv.*

NUM'ERARY, *adj.*

NUMERA'TION, *n. s.*

NUMERA'TOR, *n. s.*

NUMER'ICAL, *adj.*

NUMER'ICALLY, *adv.*

NUM'ERIST, *n. s.*

NUMEROS'ITY,

NUM'EROUS, *adj.*

NUM'EROUSNESS, *n. s.*

number contained; a rule of arithmetic: a numerator is a person who numbers; or a given number, the measure of others: numerical, denoting or pertaining to numbers; identical; the

Fr. *numeral, numérateur, numeration*; Lat. *numerus, numeratio, numerator, numerosus*. Relating to numbers: numerable is capable of being numbered: numery, any thing pertaining to a certain number: numeration, the act or art of numbering;

same not only in kind but number: numerist, one who deals in or reckons numbers: numerosity, the state of being numerous: numerous, many; containing many; containing musical numbers; harmonious; melodious: numerosness, the quality of being numerous; harmony.

Many of our schisms in the West were never heard of by the *numerous* Christian churches in the east of Asia. *Ledy.*

Queen Elizabeth was not so much observed for having a *numerous*, as a wise counsel. *Bacon.*

The blasts and undulatory breaths thereof maintain no certainty in their course; nor are they *numerally* feared by navigators. *Browne.*

In the legs or organs of progression, in animals, we may observe an equality of length, and parity of *numeration*. *Id.*

We cannot assign a respective fatality unto each which is concordant unto the doctrine of the *numerals*. *Id.*

Of assertion if *numerosity* of assertors were a sufficient demonstration, we might sit down herein as an unquestionable truth. *Id.*

Thy heart, no ruder than the rugged stone, I might, like Orpheus, with my *numerous* moan Melt to compassion. *Waller.*

I must think it improbable that the sulphur of antimony would be but *numerically* different from the distilled butter or oil of roses. *Boyle.*

His verses are so *numerous*, so various, and so harmonious, that only Virgil, whom he professedly imitated, has surpassed him. *Dryden.*

That which will distinguish his style is, the *numerosness* of his verse. There is nothing so delicately turned in all the Roman language. *Id.*

Numeration is but still the adding of one unit more, and giving to the whole a new name or sign, whereby to know it from those before and after. *Locke.*

Some who cannot retain the several combinations of numbers in their distinct orders, and the dependence of so long a train of *numerical* progressions, are not able all their lifetime regularly to go over any moderate series of numbers. *Id.*

The *numerical* characters are helps to the memory, to record and retain the several ideas about which the demonstration is made. *Id.*

Contemplate upon his astonishing works, particularly in the resurrection and reparation of the same *numerical* body, by a re-union of all the scattered parts. *South.*

A supernumerary canon, when he obtains a prebend, becomes a *numery* canon. *Ayliffe's Parergon.*

Put thy little state in good order; govern wisely and holily those *numerous* people which are contained in so little a kingdom; that is to say, that multitude of affections, thoughts, opinions, and passions, which are in thine heart. *Mason.*

Words none, things *numerous* it contains:

And, things with words compared,

Who needs be told, that has his brains,

Which merit most regard?

To the wall, with Hate and Hunger,

Numerous as wolves and stronger,

On they sweep.

In Time's pursuits men ran till out of breath:

The astronomer soared up, and counted stars,

And gazed upon the heaven's bright face,

Till he dropped down dim-eyed into the grave:

The *numerist*, in calculations deep,

Grew gray.

Pollok.

NUMERAL CHARACTERS OF THE ARABS are those figures which are now used in all the operations of arithmetic in every nation of Europe. A writer in the *Gentleman's Magazine* thus endeavours to prove that the Arabs derived their notations from the Greeks:—'I maintain,' says he, 'that the Indians received their numeral characters from the Arabians, and the Arabians from the Greeks, as from them they derived all their learning, which in some things they improved, but for the most part have altered. The numerical figures which they received from the Greeks are proofs of this alteration; which is so great, that without particular attention one can scarcely discover in them the vestiges of their origin. But when we compare them carefully, and without prejudice, we find in them manifest traces of the Greek figures. The Greek numerical figures were no other than the letters of their alphabet. A small stroke was the mark of unity. The β , being abridged of its two extremities, produced the 2. If you incline the γ a little on its left side, and cut off its foot, and make the left horn round towards the left side, you will produce a 3. The Δ makes the 4, by raising the right leg perpendicularly, and lengthening it a little below the base, and lengthening the base on the left side. The ϵ forms the 5, by turning the lowest semicircle towards the right, which before was turned towards the left side. The number 5 forms the 6 by having its head taken off, and its body rounded. ζ , by taking away the base, makes the 7. If we make the top and bottom of θ round, we shall form an 8. The θ is the 9 with very little alteration. The cypher 0 was only a point, to which one of the figures was added to make it stand for ten times as much. It was necessary to mark this point very strongly: and, in order to form it better, a circle was made, which was filled up in the middle; but that circumstance was afterwards neglected. Theophrastus, an historian of Constantinople, who lived in the ninth century, says expressly, that the Arabians retained the Greek figures, having no characters in their language to represent all the numbers. The Greeks observed in their numbers the decuple progression, which the Arabians have retained.' That this reasoning is plausible will hardly be questioned; but whether it be conclusive our readers must determine.

NUMERAL LETTERS, OR NUMERALS, those letters of the alphabet which are generally used for figures; as I, one; V, five; X, ten; L, fifty; C, 100; D, 500; M, 1000, &c. It is not agreed how the Roman numerals originally received their value. It has been supposed that the Romans used M to denote 1000, because it is the first letter of mille, the Latin for 1000; C to denote 100, because it is the first letter of centum, the Latin for 100; that D, being formed by dividing the old M in the middle, was therefore appointed to stand for 500, or half as much as the M's ood for when it was whole; or, more probably, that D stands for dimidium mille, the half of 1000: and that L, being half a C, was, for the same reason, used for fifty; that V stood for five, because it is the fifth vowel; that X stood for ten, because it contains V twice, one of them

inverted; and that I was used for one, because it is the first letter of initium, the beginning. But all these are fanciful derivations; and the following are perhaps equally so, though some think they afford the most natural account of the matter. The Romans probably put down a single stroke, I, for one; this I they doubled, trebled, and quadrupled, to express two, three, and four; thus II. III. IIII. So far they could easily number the strokes with a glance of the eye. But they found that, if more were added, it would be necessary to tell the strokes one by one; they therefore expressed five by joining two strokes together in an acute angle, thus, V, which is the more probable, as the progression of the Roman numbers is from five to five, i. e. from the fingers on one hand to the fingers on the other. After they had made this acute angle V, for five, they added the single strokes to it to the number of four, thus, VI. VII. VIII. IIIII, and then, to prevent confusion, they doubled their acute angle by prolonging the two lines beyond their intersection, thus, X to denote two fives, or ten. After this they doubled, trebled, and quadrupled, this double acute angle thus, XX. XXX. XXXX. They then joined two single strokes in another form, and, instead of an acute angle, made a right angle L to denote fifty. When this fifty was doubled, they then doubled the right angle thus, L, to denote 100; and having numbered this double right angle four times, thus, LL. EEE. LEEE. when they came to the fifth number as before, they reversed it, and put a single stroke before it, thus, LI, to denote 500; and, when this 500 was doubled, then they also doubled their double right angle, setting two double right angles opposite to each other, with a single stroke between them, thus, LL, to denote 1000: when this note for 1000 had been four times repeated, then they put down LI, for 5000, EEE, LI, for 10,000, and LI, LI, for 50,000, and EEE, LI, LI, LI, for 1,000,000. That the Romans did not originally write M for 1000, and C for 100, but square characters, as they are written above, we are expressly informed by Paulus Manutius; but the corners of the angles being cut off by the transcribers for despatch, these figures were gradually brought into what are now numeral letters. When the corners of LI were made round, it stood thus, CI, which is so near the Gothic α , that it soon deviated into that letter: so LI having the corner made round, it stood thus, IC, and then easily deviated into D. E also became a plain C by the same means; the single rectangle which denoted fifty was, without alteration, a capital L the double acute angle was an X; the single acute angle a V consonant; and a plain single stroke the letter I; and thus these seven letters, M, D, C, L, X, V, I, became numerals.—See ARITHMETIC.

NUMIDA, in ornithology, a genus belonging to the order gallinæ. On each side of the head there is a kind of colored fleshy horn; and the beak is serrated near the nostrils.

N. cristata, the crested guinea-hen, a species mentioned by Latham, inhabiting Africa. Perhaps it may have some relation to the crested

sort which *Marcgrave* mentions to have seen, and which came from *Sierra Leone*. This had a kind of membranous collar about the neck, was of a bluish-ash color, and had a large roundish black crest. *Buffon*, who describes it at great length, calls it *la peintade*. *Linnaeus* and *Gmelin* call it *numida meleagris*, &c. *Ray* and *Willoughby* call it *gallus* and *gallina Guineensis*, &c. *Mr. Pennant* contends, and seems to prove, that the pintadoes had been early introduced into Britain, at least prior to the year 1277. But they seem to have been much neglected, on account of the difficulty of rearing them; for they occur not in our ancient bills of fare. They have a double caruncle at the chaps, and no fold at the throat.

N. meleagris, the Guinea hen, is a native of Africa. It is larger than a common hen. Its body is sloped like that of a partridge, and its color is all over a dark gray, very beautifully spotted with small white specks; there is a black ring round the neck; its head is reddish, and it is blue under the eyes. They naturally herd together in large numbers, and breed up their young in common; the females taking care of the broods of others, as well as of their own. *Barbut* informs us, that in Guinea they go in flocks of 200 or 300, perch on trees, and feed on worms and grasshoppers; that they are run down and taken by dogs; and that their flesh is tender and sweet, generally white, though sometimes black. They breed very well with us. *Mr. Latham* observes 'that the native place of this bird is without doubt Africa, and that it is the *meleagris* of old authors. It is supposed originally to have come from Nubia, and was esteemed in the Roman banquets. It has been met with wild, in flocks of 200 or 300, by various travellers. *Dampier* found them in numbers in the island of Mayo; and *Forster* speaks of them as numerous at St. Jago; but they have been transported into the West Indies and America, and are now in a wild state in those places as well as domesticated.' The white-breasted one is a mere variety, of which there are many: it is mostly found in Jamaica.

N. mitrata, is a different and not a common species: it inhabits Madagascar and Guinea. *Pallas* seems to think that it may be the bird mentioned by *Columella* as differing from the common one; and will account for *Pliny's* having thought the *numida* and *meleagris* to be different birds.

NUMIDIA, an ancient kingdom of Africa, bounded on the north by the Mediterranean Sea; on the south by *Gætulia*, or part of Libya Interior; on the west by the *Mulucha*, a river which separated it from Mauritania; and on the east by the *Tusca*, another river that bounded it in common with Africa Propria. *Dr. Shaw* has rendered it probable that the river formerly named *Malva*, *Malvana*, *Mulucha*, or *Molochath*, is the same with that now called *Mullooiah* by the Algerines; in which case the kingdom of Numidia must have extended upwards of 500 miles in length; its breadth, however, cannot be so well ascertained; but, supposing it to have been the same with that of the present kingdom of Algiers, in the narrowest part it must have been at least forty miles broad, and in the widest

upwards of 100. This country included two districts, one inhabited by the *Massyli*, and the other by the *Masæsyli*; the latter being also called in after times Mauritania Cæsariensis, and the former Numidia Propria. The country of the *Massyli*, or, as some call it, Terra Metagonitis, was separated from the proper territory of Carthage by its eastern boundary, the river *Tusca*, and from the kingdom of the *Masæsyli*, or Mauritania Cæsariensis, by the river *Ampsaga*. It seems to correspond with that part of the province of Constantina, lying between the *Zaine* and the *Wed al Kibeer*, which is above 130 miles long, and more than 100 broad. The sea-coast of this province is for the most part mentioned as rocky, answering to the appellation given to it by *Abulfeda*, viz. *El Edwaa*, the high or lofty. It is far from being equal in extent to the ancient country of the *Masæsyli*, which *Strabo* informs us was yet inferior to the country of the *Massyli*. Its capital was *Cirta*, a place of very considerable note among the ancients. The most celebrated antiquarians think that the tract extending from the isthmus of Suez to the lake *Tritonis* was chiefly peopled by the descendants of *Mizraim*, and that the posterity of his brother *Phut* spread themselves all over the country between that lake and the Atlantic Ocean. *Herodotus* countenances this; for he tells us, that the *Libyan Nomades*, whose territories on the west were bounded by the *Triton*, agreed in their customs and manners with the Egyptians; but that the Africans, from that river to the Atlantic Ocean, differed in almost all points from them. *Ptolemy* mentions a city called *Putea*, near *Adrametum*; and *Pliny*, a river of Mauritania *Tingitana*, known by the name of *Fut*, or *Phut*; and the district adjacent to this river was called *Regio Phutensis*, which plainly alludes to the name of *Phut*.

The history of Numidia, during many of the early ages, is buried in oblivion. It is probable, however, that, as the Phœnicians were masters of a great part of the country, these transactions had been recorded, and generally known to the Carthaginians. *Jarbas*, or *Hiarbas*, probably reigned here as well as in Africa Proper, if not in Mauritania, and other parts of Libya, when *Dido* began to build *Byrsa*. *Justin* says that, about the age of *Herodotus*, the people of this country were called both Africans or Libyans, and Numidians. He likewise intimates that about this time the Carthaginians vanquished both the Moors or Mauritians, and Numidians; in consequence of which they were excused from paying the tribute which had hitherto been demanded of them. After the conclusion of the first Punic war the African troops carried on a bloody contest against their masters the Carthaginians; and the most active in this rebellion, according to *Diodorus Siculus*, were a part of the Numidian nation named *Micatanians*. This so incensed the Carthaginians, that, after *Hamilcar* had either killed or taken prisoners all the mercenaries, he sent a large detachment to ravage the country of those Numidians. That detachment executed his orders with the utmost cruelty, plundering the district, and crucifying all the prisoners without distinction. This filled

the rest with such indignation and resentment, that both they and their posterity ever afterwards bore an implacable hatred to the Carthaginians. In the time of the second Punic war, Syphax, king of the Massesyli, entered into an alliance with the Romans, and attacked the Carthaginians. This induced Gala, king of the Massyli, to conclude a treaty with the Carthaginians, in consequence of which his son Masinissa marched at the head of a powerful army to give Syphax battle. The contest ended in favor of Masinissa; 30,000 Massesyli were put to the sword, and Syphax driven into Mauritania; and similar misfortunes attended Syphax in another engagement, where his troops were entirely defeated and dispersed.

Gala dying, whilst his son Masinissa was acting at the head of the Numidian troops sent to the assistance of the Carthaginians in Spain, his brother Desalces, according to the rules of succession in Numidia, took possession of the Massylian throne. That prince dying soon after, Capusa his eldest son succeeded him. But he did not long enjoy his high dignity; for one Mezetus a person of the royal blood, but an enemy to the family of Gala, excited a great part of his subjects to revolt. A battle soon took place between him and Capusa, in which the latter was slain, with many of the nobility, and his army entirely defeated. But, though Mezetus thus became possessed of the sovereignty, he did not think proper to assume the title of king, but styled himself guardian to Lacumaces, the surviving son of Desalces, whom he graced with the royal title. To support himself in his usurpation he married the dowager of Desalces, who was Hannibal's niece, and consequently of the most powerful family in Carthage. To attain the same end, he sent ambassadors to Syphax, to conclude a treaty of alliance with him. In the mean time Masinissa, receiving advice of his uncle's death, and his cousin's slaughter, and of Mezetus's usurpation, immediately passed over to Africa, and went to the court of Bocchar, king of Mauritania, to solicit succours. Bocchar, sensible of the great injustice done Masinissa, gave him a body of 4000 Moors to escort him to his dominion. His subjects, having been apprised of his approach, joined him upon the frontiers with a party of 500 men. The Moors, in pursuance of their orders, returned home as soon as Masinissa reached the confines of his kingdom. Notwithstanding which, and the small body that declared for him, having accidentally met Lacumaces at Thapsus with an escort going to implore Syphax's assistance, he drove him into the town, which he carried by assault, after a faint resistance. However, Lacumaces, with many of his men, escaped to Syphax. The fame of this exploit gained Masinissa so great credit that the Numidians flocked to him from all parts, and, amongst the rest, many of his father Gala's veterans, who pressed him to make a speedy and vigorous push for his hereditary dominions. Lacumaces having joined Mezetus with a reinforcement of Massesylians, which he had prevailed upon Syphax to send to the assistance of his ally, the usurper advanced at the head of a

numerous army to offer Masinissa battle; which that prince, though much inferior in numbers did not decline. Hereupon an engagement ensued; which, notwithstanding the inequality of numbers, ended in the defeat of Lacumaces. The immediate consequence of this victory of Masinissa was a quiet and peaceable possession of his kingdom; Mezetus and Lacumaces, with the few that attended them, flying into the territories of Carthage.

Notwithstanding this success, Masinissa being apprehensive that he should be obliged to sustain a war against Syphax, he offered to treat Lacumaces with as many marks of distinction as his father Gala had Desalces, provided that prince would put himself under his protection. He also promised Mezetus pardon, and a restitution of all the effects forfeited by his treasonable conduct, if he would make his submission to him. Both of them readily complied with the proposal, and immediately returned home; so that the tranquillity and repose of Numidia would have been settled upon a solid and lasting foundation, had not this been prevented by Asdrubal, who was then at Syphax's court. He insinuated to that prince, 'that he was greatly mistaken, if he imagined Masinissa would be satisfied with his hereditary dominions: that he was a prince of much greater capacity and ambition than either his father Gala, his uncle Desalces, or any of his family. And that, in fine, unless this rising flame was extinguished before it came to too great a head, both the Massesylan and Carthaginian states would be infallibly consumed by it.' Syphax, alarmed by these suggestions, advanced with a numerous body of forces into a district then in possession of Masinissa. This brought on a general action between these two princes; wherein the latter was totally defeated, his army dispersed, and he himself obliged to fly to the top of mount Balbus, attended only by a few of his horse. Such a decisive battle at this juncture, before Masinissa was fixed on the throne, could not but put Syphax into possession of the kingdom of the Massyli. Masinissa in the mean time made nocturnal incursions from his post upon mount Balbus, and plundered all the adjacent country, particularly that part of the Carthaginian territory contiguous to Numidia. This district he not only thoroughly pillaged, but likewise laid waste with fire and sword, carrying off an immense booty, which was bought by some merchants, who had put into one of the Carthaginian ports for that purpose. In fine, he did the Carthaginians more damage, not only by committing such dreadful devastations, but by massacring and carrying into captivity vast numbers of their subjects on this occasion, than they could have sustained in a pitched battle, or one campaign of a regular war. Syphax, at the pressing and reiterated instances of the Carthaginians, sent Bocchar, one of his most active commanders, with a detachment of 4000 foot, and 2000 horse, to reduce this pestilent gang of robbers, promising him a great reward if he could bring Masinissa either alive or dead. Bocchar, watching an opportunity, surprised the Massylians, as they were straggling about the country without any

order or discipline; so that he took many prisoners, dispersed the rest, and pursued Masinissa himself, with a few of his men, to the top of the mountain where he had before taken post. Considering the expedition as ended, he not only sent many head of cattle, and the other booty that had fallen into his hands, to Syphax, but likewise all the forces, except 500 foot and 200 horse. With this detachment he drove Masinissa from the summit of the hill, and pursued him through several narrow passes and defiles, as far as the plains of Clupea. Here he so surrounded him, that all the Massylians except four, were put to the sword, and Masinissa himself, after having received a dangerous wound, escaped with the utmost difficulty. As this was effected by crossing a rapid river, in which attempt two of his four attendants perished in the sight of the detachment that pursued him, it was rumored all over Africa that Masinissa also was drowned. For some time he lived undiscovered in a cave, where he was supported by the two horsemen that had made their escape with him. But having cured his wound, by the application of some medicinal herbs, he boldly began to advance towards his own frontiers. In his march he was joined by about forty horse, and, soon after his arrival among the Massyli, so many people flocked to him from all parts that out of them he formed an army of 6000 foot and 4000 horse. With these forces he not only reinstated himself in the possession of his dominions, but likewise laid waste the borders of the Massyli. This so irritated Syphax that he immediately assembled a body of troops, and encamped very commodiously upon a ridge of mountains between Cirta and Hippo. His army he commanded in person; and detached his son Vermina, with a considerable force, to take a compass, and attack the enemy in the rear. In pursuance of his orders, Vermina set out in the beginning of the night, and took post in the place appointed him, without being discovered by the enemy. In the mean time Syphax decamped, and advanced towards the Massyli, to give them battle. When he had possessed himself of a rising ground that led to their camp, and concluded that his son Vermina must have formed the ambuscade behind them, he began the fight. Masinissa being advantageously posted, and his soldiers distinguishing themselves in an extraordinary manner, the dispute was long and bloody. But Vermina unexpectedly falling upon their rear, and thus obliging them to divide their forces, which were scarcely able before to oppose the main body under Syphax, they were soon thrown into confusion, and forced to betake themselves to a precipitate flight. All the avenues being blocked up, partly by Syphax and partly by his son, such a dreadful slaughter was made of the unhappy Massyli, that only Masinissa himself, with sixty horse, escaped to the Lesser Syrtis. Here he remained betwixt the confines of the Carthaginians and Garamantes, till the arrival of Lælius and the Roman fleet on the coast of Africa, when he joined with the Romans; and by the assistance of Lælius, at last reduced Syphax's kingdom. See *ROME*. According to Zonoras, Ma-

sinissa and Scipio, before the memorable battle of Zama, deprived Hannibal by stratagem of some advantageous posts; which greatly contributed to the victory the Romans obtained. At the conclusion, therefore, of the second Punic war, he was amply rewarded by the Romans for the important services he had done them. As for Syphax, after the loss of his dominions, he was kept in confinement for some time at Alba; whence being removed to grace Scipio's triumph, he died at Tibur in his way to Rome. Zonoras adds, that his corpse was decently interred; that all the Numidian prisoners were released; and that Vermina, by the assistance of the Romans, took peaceable possession of his father's throne. However, part of the Massylian kingdom had been before annexed to Masinissa's dominions, to reward that prince for his singular fidelity and attachment to the Romans. A short time before the beginning of the third Punic war he again attacked the Carthaginians, and by drawing a line of circumvallation around their army, posted upon an eminence, under the command of Asdrubal, Masinissa cut off all manner of supplies from them; which introduced both the plague and famine into their camp. As the body of Numidian troops employed in this blockade was not near so numerous as the Carthaginian forces, the line here mentioned must have been extremely strong, and the effect of great labor and art. The Carthaginians, finding themselves reduced to the last extremity, concluded a peace upon the following terms; which Masinissa dictated:—1. That they should deliver up all deserters. 2. That they should recal their exiles, who had taken refuge in his dominions. 3. That they should pay him 5000 talents of silver within fifty years. 4. That their soldiers should pass under the yoke, each carrying off only a single garment. As Masinissa himself, though between eighty and ninety years of age, conducted the whole enterprise, he must have been extremely well versed in fortification, and other branches of the military art. Soon after, the consuls landed an army in Africa, in order to lay siege to Carthage, without imparting to Masinissa their design. This not a little chagrined him, as it was contrary to the former practice of the Romans; who, in the preceding war, had communicated their intentions to him, and consulted him on all occasions. When, therefore, the consuls applied to him for a body of his troops to act in concert with their forces, he answered, 'that they should have a reinforcement when they stood in need of it.' It could not but be provoking to him, that after he had extremely weakened the Carthaginians, and even brought them to the brink of ruin, his pretended imperious friends should come to reap the fruits of his victory, without giving him the least intelligence of it. However, his mind soon returned to its natural bias in favor of the Romans. Finding his end approaching, he sent to Æmilianus, then a tribune in the Roman army, to desire a visit from him. What he proposed by this visit, was to invest him with full powers to dispose of his kingdom and estate as he should think proper, for the benefit of his children. The high

idea he had entertained of that young hero's abilities and integrity induced him to take this step. But, believing that death would not permit him to have a personal conference with Æmilianus upon this subject, he informed his wife and children, in his last moments, that he had empowered him to dispose in an absolute manner of all his possessions, and to divide his kingdom amongst his sons. To which he subjoined, 'I require, that whatever Æmilianus may decree, shall be executed as punctually as if I myself had appointed it by my will.' Before the arrival of the tribune he expired.

During his youth he had met with strange reverses of fortune. His kingdom finally, however, extended from Mauritania to the western confines of Cyrenaica; whence it appears, that he was one of the most powerful princes of Africa. Many of the inhabitants of this vast tract he civilised, teaching them to cultivate their soil, and to reap those natural advantages which the fertility of their country offered them. He was of a more robust habit of body than any of his contemporaries, being blessed with the greatest health and vigor to the last, and his youngest son, Stembal, was only four years old at his decease. Though above ninety years of age, he performed all the exercises used by young men, and always rode without a saddle. According to Appian, he left a numerous and well-disciplined army, and an immense quantity of wealth behind him. Of fifty-four sons that survived him, only three were legitimate, to wit, Micipsa, Gulussa, and Mastanabal. Æmilianus, arriving at Cirta after he had expired, divided his kingdom, or rather the government of it, amongst these three, though to the others he gave considerable possessions. To Micipsa, the eldest, who was of a pacific disposition, he assigned Cirta, the metropolis, for the place of his residence, in exclusion of the others. Gulussa, the next to him, being a prince of a military genius, had the command of the army, and the transacting of all affairs relative to peace or war. And Mastanabal, the youngest, had the administration of justice allotted him as an employment suitable to his education. They enjoyed in common the immense treasures Masinissa had amassed, and were all of them dignified by Æmilianus with the royal title. After he had made these dispositions, he departed from Cirta, taking with him a body of Numidian troops, under the conduct of Gulussa, to reinforce the Roman army that was then acting against the Carthaginians.

Mastanabal and Gulussa died soon after their father, and Micipsa therefore became sole monarch of Numidia. In his reign, according to Orosius, a great part of Africa was covered with locusts which destroyed all the produce of the earth, and even devoured dry wood. But at last they were all carried by the wind into the African Sea, out of which being thrown in vast heaps upon the shore, a tremendous plague ensued. In Numidia alone 800,000 men perished, and in Africa Propria 200,000; amongst the rest, 30,000 Roman soldiers quartered in and about Utica for the defence of the last province. At Utica, in particular, the mortality raged to such a degree, that 1500 dead bodies were carried

out of one gate in a day. Micipsa had two sons, Adherbal and Hiempsal, whom he educated in his palace, together with his nephew Jugurtha. That young prince was the son of Mastanabal; but, his mother having been only a concubine, Masinissa had taken no great notice of him. However, Micipsa, considering him as a prince of the blood, took as much care of him as he did of his own children. Jugurtha became very handsome, endued with great strength of body, and adorned with great intellectual endowments. He exercised himself in running, riding, hurling the javelin, and other manly exercises, suited to the martial genius of the Numidians. The chase was his chief delight; but it was that of lions and other savage beasts. His talents at first charmed Micipsa, who thought them an ornament to his kingdom. But he soon began to reflect, that he was considerably advanced in years, and his children in their infancy; that mankind naturally thirst after power, and often stick at nothing to gratify their ambition. These reflections excited his jealousy, and determined him to expose Jugurtha to various dangers, some of which he hoped might prove fatal to him. For this purpose he gave him the command of a body of forces which he sent to assist the Romans, who were then besieging Numantia. But Jugurtha, by his admirable conduct, not only escaped all danger, but acquired the esteem of the whole army, and Scipio sent a high character of him to his uncle Micipsa, while he also gave him some prudent advice in relation to his future conduct. The heroic bravery he had shown in Spain, his undaunted courage, joined to the utmost calmness of mind, and above all the advantageous testimonials of his conduct given by Scipio, attracted a universal esteem. Micipsa himself, charmed with the high idea the Roman general had entertained of his merit, changed his behaviour towards him; resolving, if possible, to win his affection by kindness. He therefore adopted him, and declared him joint heir with his two sons to the crown. Finding, some few years afterwards, that his end approached, he sent for all three to his bed side; where, in the presence of the whole court, he desired Jugurtha to recollect with what extreme tenderness he had treated him, and consequently to consider how well he had deserved at his hands. He then intreated him to protect his children on all occasions; who, being before related to him by the ties of blood, were now by their father's bounty become his brethren. He farther insinuated, that neither arms nor treasures constitute the strength of a kingdom, but friends, who are neither won by arms nor gold, but by real services, and an inviolable fidelity. Then, addressing himself to Adherbal and Hiempsal, 'And you (said he) I enjoin to pay the highest reverence to Jugurtha. Endeavour to imitate, and if possible surpass his exalted merit, that the world may not hereafter observe Micipsa's adopted son to have reflected greater glory upon his memory than his own children.'

Micipsa's kindness made no impression on the mind of the ungrateful Jugurtha. Soon after the old king's death, he found means to assassinate Hiempsal in the city of Thirmita where

his treasures were deposited, and drive Adherbal out of his dominions. That unhappy prince fled to Rome, where he endeavoured to engage the senate to espouse his quarrel; but, notwithstanding the justice of his cause, Jugurtha's ambassadors, by distributing vast sums of money amongst them, brought them so far over, that a majority palliated his inhuman proceedings. This encouraged those ministers to pretend that Hiempsal had been killed by the Numidians on account of his excessive cruelty, and that Adherbal was the aggressor in the late troubles. They therefore intreated the senate to judge of Jugurtha's behaviour in Africa from his conduct at Numantia, rather than from the suggestion of his enemies. Upon which the majority of the senate declared in his favor. A few, however, who were not abandoned to corruption, insisted upon bringing him to condign punishment. But as they could not prevail, he had the best part of Numidia allotted him, and Adherbal was forced to rest satisfied with the remainder. Jugurtha, finding now that every thing was venal at Rome, thought he might pursue his towering projects without any obstruction from that quarter. He therefore threw off the mask, and attacked his cousin by open force. As Adherbal was a prince of a pacific disposition, and in almost all respects the reverse of Jugurtha, he was by no means a match for him. The latter therefore pillaged his territories, stormed several of his fortresses, and overran a great part of his kingdom without opposition. Adherbal, depending on the friendship of the Romans, which his father in his last moments assured him would be a stronger support to him than all the troops and treasures in the universe, despatched deputies to Rome to complain of these hostilities. But, whilst he lost his time in sending thither fruitless deputations, Jugurtha overthrew him in a pitched battle, and soon after shut him up in Cirta. During the siege of this city, Roman commissioners arrived there, to persuade both parties to an accommodation; but, finding Jugurtha untractable, they returned without so much as conferring with Adherbal. A second deputation, composed of senators, with Æmilius Scaurus, president of the senate, at their head, landed some time after at Utica, and summoned Jugurtha to appear before them. That prince at first seemed to be under dreadful apprehensions, especially as Scaurus reproached him with his enormous crimes, and threatened him with the resentment of the Romans, if he did not immediately raise the siege of Cirta. However, the Numidian, by his address and the irresistible power of his gold, so mollified Scaurus, that he left Adherbal at his mercy. In fine, Jugurtha had at last Cirta surrendered to him, upon condition only that he should spare the life of Adherbal. But the merciless tyrant, when he had obtained possession of the town, ordered him to be put to a most cruel death. The merchants likewise, and all the Numidians in the place capable of bearing arms, he caused, without distinction, to be put to the sword. Rome was struck with horror at the news of this tragical event. Yet the venal senators still concurred with Jugurtha's ministers in palliating his enormous crimes. Notwithstanding which,

the people, excited by Caius Memmius their tribune, who bitterly inveighed against the venality of the senate, resolved not to let so flagrant an instance of villany go unpunished. This induced the senate likewise to declare their intention to chastise Jugurtha. For this purpose an army was levied to invade Numidia, and the command of it given to the consul Calpurnius Bestia, a person of great abilities but of the most insatiable avarice. Jugurtha, being informed of these great preparations, sent his son to Rome, to avert the impending storm, plentifully supplied with money. But Bestia, in the hopes of great advantages from an invasion of Numidia, defeated all his intrigues, and had a decree passed, ordering him and his attendants to depart Italy in ten days, unless they were come to deliver up the king himself, and all his territories, to the republic. This decree being notified to them, they returned without so much as having entered the gates of Rome; and the consul soon after landed with a powerful army in Africa. For some time he carried on the war very briskly; he reduced several strong holds, and took many Numidian prisoners. But, upon the arrival of Scaurus, a peace was granted Jugurtha upon advantageous terms. That prince coming from Vaca, the place of his residence, to the Roman camp, to confer with Bestia and Scaurus, and the preliminaries of the treaty being immediately after settled between them in private conferences, every one at Rome was convinced that the president of the senate and the consul had sacrificed the republic to their avarice. The indignation therefore of the people in general displayed itself in the strongest manner. Memmius also fired them with his speeches. It was therefore resolved to despatch the prætor Cassius, a man they could confide in, to Numidia, to prevail upon Jugurtha to come to Rome, that they might learn from himself which of their generals and senators had been seduced by the pestilential influence of corruption. Upon his arrival there he bribed one Bæbius Salca, a man of great authority amongst the plebeians, but of insatiable avarice, by whose assistance he not only eluded all the endeavours of the people of Rome to bring him to justice, but likewise enabled Bomilcar, one of his attendants, to get Massiva, an illegitimate son of Micipsa, assassinated in the streets of Rome. That young prince was advised by many Romans of probity, well-wishers to the family of Masinissa, to apply for the kingdom of Numidia; which coming to Jugurtha's ears, he prevented the application by this execrable step. However, he was obliged to leave Italy immediately. Jugurtha had scarcely set foot in Africa, when he received advice that the senate had annulled the shameful peace concluded with him by Bestia and Scaurus. Soon after, the consul Albinus transported a Roman army into Numidia. Flattering himself with the hopes of reducing Jugurtha to reason, he found himself deceived; for that crafty prince, by various artifices, so amused and imposed upon Albinus, that nothing of moment happened that campaign. His brother Aulus, who succeeded him in the command of the army, was still more unsuccessful; for after

a fruitless attempt to besiege Suthel, where the king's treasures were deposited, he marched his forces into a defile out of which he found it impossible to extricate himself. He therefore was obliged to submit to the ignominious ceremony of passing under the yoke, with all his men, and to quit Numidia in ten days, to save his troops from immediate destruction. This scandalous treaty was declared void at Rome, as being concluded without the authority of the people. The Roman troops retired into Africa Propria, which they had now reduced into the form of a Roman province. In the mean time Caius Mamilius Limetanus, tribune of the people, excited the plebeians to enquire into the conduct of those persons by whose assistance Jugurtha had eluded all the decrees of the senate. This occasioned a great ferment, which produced a prosecution of the guilty senators, that was carried on for some time with the utmost zeal. Lucius Metellus, the consul during these transactions, had Numidia assigned him for his province, and was appointed general of the army against Jugurtha. As he entirely disregarded wealth, the Numidian found him superior to all his offers. Jugurtha was therefore now forced to regulate his conduct according to the motions of Metellus with the greatest caution; and to exert his utmost bravery. The Romans soon reduced Vacca, a large opulent city, and the most celebrated mart in Numidia. They also defeated Jugurtha in a pitched battle; overthrew Bomilcar, one of his generals, upon the banks of the Muthullus; and, in fine, forced Jugurtha to take shelter in a place rendered almost inaccessible by rocks and woods. However, Jugurtha exerted himself surprisingly, exhibiting the courage, abilities, and attention of a consummate general, to whom despair administers fresh strength. But his troops could not make head against the Romans; they were again worsted by Marius, though they obliged Metellus to raise the siege of Zama. Jugurtha, therefore, finding his country every where ravaged, his most opulent cities plundered, his fortresses reduced, his towns burnt, vast numbers of his subjects put to the sword and taken prisoners, began to think seriously of coming to an accommodation with the Romans. His favorite Bomilcar, in whom he reposed the highest confidence, but who had been gained over by Metellus, observing this disposition, persuaded him to deliver up his elephants, money, arms, horses, and deserters, into the hands of the Romans. Some of these last, to avoid punishment, retired to Bocchus, king of Mauritania, and listed in his service. But Metellus, ordering Jugurtha to repair to Tisidium, a city of Numidia, and wait farther directions, and he refusing, hostilities were renewed with greater fury than ever. Fortune now seemed to declare in favor of Jugurtha: he retook Vacca, and massacred all the Roman garrison, except Turpillius the commandant. But soon after a Roman legion seized again upon it, and treated the inhabitants with the utmost severity. About this time Gauda, a son of Mastanabal, whom Micipsa in his will had appointed to succeed if his two legitimate sons

and Jugurtha died without issue, wrote to the senate in favor of Marius, who was then endeavouring to supplant Metellus. The Roman, soothing the vanity of Gauda, assured him that, as he was the next heir to the crown, he might depend upon being fixed upon the Numidian throne, as soon as Jugurtha was either killed or taken; and that this must soon happen, when once he appeared at the head of the Roman army with an unlimited commission. Soon after, Bomilcar and Nabdalsa formed a design to assassinate Jugurtha at the instigation of Metellus; but, this being detected, Bomilcar and most of his accomplices suffered death. The plot, however, had such an effect upon Jugurtha, that he enjoyed afterwards no tranquillity. He suspected persons of all denominations, Numidians as well as foreigners, of some black designs against him. Perpetual terrors sat brooding over his mind; he often changed his bed, and his sleep was disturbed by a spirit of fear, jealousy, and distraction. Jugurtha having destroyed great numbers of his friends, on suspicion of their having been concerned in the late conspiracy, and many more deserting to the Romans and Bocchus king of Mauritania, he found himself destitute of counsellors, generals, and all persons capable of assisting him in carrying on the war. This threw him into a deep melancholy, which rendered him dissatisfied with every thing, and made him fatigue his troops with a variety of contradictory motions. At last he was forced by Metellus to a battle. That part of the Numidian army which Jugurtha commanded behaved with resolution; but the other fled at the first onset. The Romans, therefore, entirely defeated them, took all their standards and made a few prisoners. A few were slain in the action, but the majority fled. Metellus pursued Jugurtha and his fugitives to Thala. His march, being through vast deserts, was extremely tedious and difficult. But being supplied with water by the natives, who submitted to him, Metellus advanced towards that city; when a copious shower of rain, a phenomenon in those deserts, proved a seasonable refreshment to his troops. This so animated them, that, upon their arrival before Thala, they attacked the town with such vigor, that Jugurtha with his family and treasures deposited therein, thought proper to abandon it. After a brave defence, it was reduced; the garrison, consisting of Roman deserters, setting fire to the king's palace, and consuming themselves with every thing valuable in the flames.

Jugurtha, being now reduced to great extremities, retired into Gætulia, where he formed a considerable corps. Thence he advanced to the confines of Mauritania, and engaged Bocchus king of that country, who had married his daughter, to enter into an alliance with him; in consequence of which, having reinforced his Gætulian troops with a powerful body of Mauritanians, he turned the tables upon Metellus, and obliged him to keep close within his intrenchments. Sallust informs us that Jugurtha bribed Bocchus's ministers to influence that prince in his favor; and that, having obtained an audience, he insinuated that, should Numi-

dia be subdued, Mauritania must be involved in its ruins, especially as the Romans seemed to have vowed the destruction of all the thrones in the universe. Bocchus was also determined to assist Jugurtha against his enemies, by the slight the Romans had formerly shown him. That prince, at the first breaking out of the war, had sent ambassadors to Rome, to propose an offensive and defensive alliance to the republic; which, though of the utmost consequence to it at that juncture, a few of the most venal and infamous senators prevented from taking effect. This undoubtedly wrought more powerfully upon Bocchus, in favor of Jugurtha, than the relation he stood in to him. Such was the situation of affairs when Metellus received advice of the promotion of Marius to the consulate. But, notwithstanding this injurious treatment, he generously endeavoured to draw off Bocchus from Jugurtha, though this would facilitate the reduction of Numidia for his rival. To this end ambassadors were despatched to the Mauritanian court, who intimated to Bocchus 'that it would be highly imprudent to come to a rupture with the Romans, and that he had now a fine opportunity of concluding a most advantageous treaty with them,' &c. To this Bocchus replied, 'That there was nothing he wished for more than peace, but that he could not help pitying the deplorable condition of Jugurtha; that if the Romans therefore would grant that prince the same terms they had offered him, he would bring about an accommodation.' Metellus let the Mauritanian monarch know, that it was not in his power to comply with what he desired. However he took care to keep up a private negotiation with him till Marius's arrival. By this conduct he served two ends: 1st he prevented Bocchus from coming to a general action with his troops, as Jugurtha wished; and 2dly, this inaction enabled him to discover something of the genius and disposition of the Moors; a nation of whom the Romans had scarcely formed any idea. Jugurtha, being informed that Marius with a numerous army was landed at Utica, advised Bocchus to retire, with part of the troops, to some place of difficult access, whilst he himself took post upon another inaccessible spot with the remaining corps. By this measure he hoped the Romans would be obliged to divide their forces, and thus be more exposed to his attacks. However he was disappointed; for Marius cut off great numbers of the Gætulian marauders, defeated many of Jugurtha's parties, and had almost taken that prince himself near Cirta. These advantages intimidated Bocchus, who now made overtures for an accommodation; but the Romans paid no attention to them. In the mean time Marius pushed on his conquests, reducing several places, and at last resolved to besiege Capsa. That this enterprise might be conducted with the greater secrecy, he suffered not the least hint of his design to transpire, not even among his officers. To blind them he detached A. Manlius, one of his lieutenants, with some light-armed cohorts, to the city of Lares, where he had fixed his principal magazine, and deposited the military chest. He then bent his march to-

wards the Tanaïs, and in six days arrived upon its banks, where he pitched his tents to refresh his troops; after which he advanced to Capsa, and made himself master of it. As the situation of this city rendered it extremely commodious to Jugurtha, whose operations during the war it had exceedingly favored, he delivered it up to the soldiers to be plundered and levelled with the ground. The citizens, being more strongly attached to that prince than any of the other Numidians, and of course bearing a more implacable hatred to the Romans, he put to the sword or sold for slaves. The Numidians, ever after this exploit, dreaded the very name of Marius; who had now eclipsed the glory of all his predecessor's great achievements, particularly the reduction of Thala, a city, in strength and situation, nearly resembling Capsa. Most of the places of strength in Numidia either opened their gates, or were abandoned at his approach, being terrified with what had happened to Capsa. Others, taken by storm, he laid in ashes; and, in short, filled Numidia with blood, horror, and confusion.

After an obstinate defence, he reduced a castle that seemed impregnable, seated near Mulucha, where Jugurtha kept part of his treasures. In the mean time Jugurtha, not being able to prevail upon Bocchus to advance into Numidia, was obliged to have recourse to his usual method of bribing the Mauritanian ministers. He also promised Bocchus a third part of his kingdom, provided they could either drive the Romans out of Africa, or get all the Numidian dominions confirmed to him by treaty. So considerable a cession prevailed on Bocchus to support Jugurtha with his whole power. The two African monarchs, having joined their forces, surprised Marius near Cirta as he was going into winter quarters. The Roman general was so pushed, on this occasion, that the barbarians thought themselves certain of victory; but their incaution enabled Marius to give them a defeat; which was followed four days after by so complete an overthrow that their numerous army, consisting of 90,000 men, was entirely routed. Sylla, Marius's lieutenant, most eminently distinguished himself in the last action, which laid the foundation of his greatness. Bocchus now looking upon Jugurtha's condition as desperate, and not being willing to run the risk of losing his dominions, showed a disposition to make peace with Rome. However, the Romans informed him that he could not be ranked amongst their friends, till he had delivered up Jugurtha, their inveterate enemy. Bocchus, having entertained a high idea of an alliance with Rome, resolved to secure it; and was confirmed in his resolution by Dabar, a Numidian prince, the son of Massugrada, and descended by his mother from Masinissa. Being closely attached to the Romans, he defeated all the intrigues of Aspar, Jugurtha's minister, and upon Sylla's arrival at the Mauritanian court, the affair there seemed to be entirely settled. However, Bocchus, who was in the highest degree perfidious, debated within himself whether he should sacrifice Sylla or Jugurtha, who were both then in his power. But at last he delivered up Jugurtha to Sylla, to be con-

deducted to Marius; who put him into a prison, where he died six days after of hunger.

The kingdom of Numidia was now reduced to a new form: Bocchus, for his important services, had the country of the Massæyli contiguous to Mauritania assigned him; which, from this time, took the name of New Mauritania. Numidia Propria, or the country of the Massyli, was divided into three parts; one of which was given to Hiempsal, another to Mandrestal, both descendants of Masinissa; and the third the Romans annexed to Africa Propria, or the Roman province adjacent to it. Jugurtha's two sons survived him, but spent their lives in captivity at Venusia. However, one of them, named Oxynthes, was released from his confinement by Aponius, who brought him to his army, where he treated him as a king, to draw the Numidian forces off from the Roman service. Accordingly those Numidians no sooner heard that the son of their king was fighting for the allies, than they began to desert by companies; which obliged Julius Cæsar to send all his Numidian cavalry back into Africa. A few years after this event, Pompey defeated Cneius Domitius Ahenobarbus, and Hiarbas one of the kings of Numidia, killing 17,000 of their men upon the spot; pursued the fugitives to their camp, which he soon forced, put Domitius to the sword, and took Hiarbas prisoner. He then reduced that part of Numidia which belonged to Hiarbas, who had succeeded Mandrestal, and gave it to Hiempsal, a Numidian prince, descended from Masinissa, who had always opposed the Marian faction. Suetonius informs us, that a dispute happening between Hiempsal and one Masintha, a noble Numidian, Cæsar warmly espoused the cause of Masintha, and grossly insulted Juba, Hiempsal's son, when he attempted to vindicate his father's conduct on this occasion. He pulled him by the beard, than which a more unpardonable affront could not be offered to an African. In short, he screened Masintha from the insults and violence of his enemies; which was the reason of Juba's adhering so closely afterwards to the Pompeian faction. In consequence of this indignity, Juba did Cæsar great damage in the civil wars betwixt him and Pompey. By a stratagem he drew Curio, one of his lieutenants, into a general action, which it was his interest to have avoided. He caused it to be given out, all over Africa Propria and Numidia, that he was retired into some remote country at a great distance from the Roman territories. This coming to Curio's ears, who was then besieging Utica, it prevented him from taking precautions against a surprise. Soon after, Curio hearing that a small body of Numidians was approaching his camp, he put himself at the head of his forces to attack them, and, lest they should escape, began his march in the night. Some of their advanced posts he found asleep, and cut them to pieces; which still farther animated him. In short, about day break, he came up with the Numidians, whom he attacked with great bravery, though his men were then fasting, and vastly fatigued by their forced march. In the mean time Juba, who had marched privately with the main body of his army, advanced to the relief of his men.

The Romans had met with great resistance before he appeared; so that he easily broke them, killed Curio, with a great part of his troops, upon the spot, pursued the rest to their camp, which he plundered, and took many of them prisoners. Most of the fugitives, who endeavoured to make their escape on board the ships in the port of Utica, were either slain by the pursuers or drowned. The remainder fell into the hands of Varus, who would have saved them; but Juba, who claimed the honor of the victory, ordered most of them to be put to the sword. This victory infused new vigor into the Pompeian faction, who conferred great honors upon Juba, and gave him the title of king of all Numidia. But Cæsar and his adherents declared him an enemy to Rome, adjudging to Bocchus and Bogud the sovereignty of his dominions. Juba, afterwards uniting his forces with those of Scipio, reduced Cæsar to great extremities, and would in all probability have totally ruined him, had he not been relieved by Publius Sittius. That general, having formed a considerable corps, consisting of Roman exiles, and Mauritanian troops sent him by Bocchus, according to Dio, or, as Cæsar has it, by Bogud, made an irruption into Gætulia and Numidia, whilst Juba was in Africa Propria. As he ravaged those countries in a dreadful manner, Juba immediately returned with the best part of his army, to preserve them from utter destruction. Cæsar, knowing his horse to be afraid of the enemy's elephants, did not attack Scipio in the absence of the Numidian, till his own elephants, and a fresh reinforcement of troops, arrived from Italy. In the mean time Scipio despatched reiterated expresses to Juba to hasten to his assistance; but could not prevail upon him to move out of Numidia, till he had promised him all the Roman dominions in Africa, on the expulsion of Cæsar. Upon this, having sent a large detachment against Sittius, he marched with the rest of his troops to assist Scipio. However, Cæsar overthrew Scipio, Juba, and Labienus, near the town of Thapsus, and forced all their camps. As Scipio was the first surprised and defeated, Juba fled into Numidia, without waiting for Cæsar's approach; but the Numidians sent against Sittius, having been dispersed by that general, none of his subjects there would receive him. He therefore, in despair, sought death in a single combat with Petreius, and, having killed him, caused himself to be despatched by one of his slaves. After this decisive action, and the reduction of Africa Propria, Cæsar made himself master of Numidia, which he reduced to a Roman province, appointing Crispus Sallustius to govern it in quality of proconsul, with private instructions to plunder the inhabitants, and thus put it out of their power to shake off the Roman yoke. However, Bocchus and Bogud still preserved a sort of sovereignty in the country of the Massæyli and Mauritania. The former, having deserted Cæsar, sent an army into Spain to assist the Pompeians; and the latter, with his forces, determined the victory in favor of Cæsar at the battle of Munda. Bogud, afterwards siding with Antony against Octavius, sent a body of forces to assist him in Spain; when, the Tingitanians revolting from

him, Bocchus with an army composed of Romans in the interest of Octavius, who passed over from Spain into Africa, and his own subjects, possessed himself of Mauritania Tingitana. Bogud fled to Antony; and Octavius, after the conclusion of the war, honored the inhabitants of Tingi with all the privileges of Roman citizens. He likewise confirmed Bocchus king of Mauritania Cæsariensis, or the country of the Massæyli, in the possession of Tingitania, which he had conquered, as a reward for his important services. In this he imitated the example of Julius

Cæsar, who divided some of the fruitful plains of Numidia among the soldiers of P. Sittius, who had conquered great part of that country; and appointed Sittius himself sovereign of that district. Sittius merited this reward, having taken Cirta, killed Sabura, Juba's general, entirely dispersed his forces, and either cut off or taken prisoners most of the Pompeian fugitives that escaped from the battle of Thapsus. After Bocchus's death, Mauritania and the Massæylian Numidia were in all respects considered as Roman provinces.

NUMISMATOLOGY.

NUMISMATOLOGY, from Greek *νομισμα* money, and *λογος* a discourse, is the name given to the science which treats of coins and medals, whether ancient or modern. The application of this term has, however, generally been confined to the consideration of coins rather as objects of historical or antiquarian research, than as media of commerce or tests of value; and the coinage, like the history of the passing day, is too universally understood to be a fit subject for study. As an auxiliary to history, numismatology certainly appears in its most important character, and affords documents too durable and too widely diffused to be utterly destroyed, and at the same time too valuable and too numerous to be easily falsified. Gold, the only metal on which the finger of time leaves no impression, was in ancient times comparatively common, and the coinage of the Roman emperors may be seen in the cabinets of the curious in as perfect a state as when first issued from the imperial mint. In modern times official papers and public records verify the statements of the historian; but in the earlier and more barbarous ages of the world such annals were seldom compiled, and when they were, in the wars and tumults of succeeding times, they were constantly liable to be destroyed. Before the introduction of printing but few copies of the most important records could be obtained, and an incursion of the enemy or an accidental conflagration would leave a people dependent for their history on tradition (attested by this art) alone. The more civilised nations, it is true, erected public buildings and monuments upon which they inscribed important transactions and occurrences; but these, few in number, were confined in their utility to the country where they were erected, and were not near so durable as the small gold medals commonly struck in honor of their erection.

Ancient writers frequently omit in the course of their narratives the dates of particular transactions, and, were it not for these metallic documents, we should often be at a loss to discover even the order in which they occurred. Vaillant in his learned history of the kings of Syria, published at Paris 1681, set the first important example of fixing the dates and arranging the order of events in ancient historians by means of these infallible vouchers. By them alone he was enabled to ascertain in a very great degree the chronology of important events in three of the most celebrated

kingdoms of the ancient world: viz. those of Egypt, Syria, and Parthia. In the Roman medals, in particular, we most commonly have, with the portrait of the prince and date of the consulship or tribunitian power, the representation or poetical symbol of some great event on the reverse. The reigns of Nerva and Trajan, for instance, are much better illustrated by coins than by historians; for Suetonius ends with Domitian, and the *Historiæ Augustæ Scriptores* begin with Hadrian. Capitolinus, in his life of Maximinus Junior, is in doubt whether Maximus and Pupienus were two emperors, or two names for the same emperor; had he met with one of the coins inscribed M. Cl. Pupienus Maximus Avg. he would have decided that Maximus was only another name for Pupienus. Medals also by supplying portraits of the great men of antiquity create in the mind a peculiar interest in their history, and we study their actions as in a theatre with the actors before us.—We see with delight the—

Black-eyed Cæsar, with
The eagle's beak between those eyes which ne'er
Beheld a conqueror or looked along
The land he made not Rome's;

and recognise, in the savage features of a Nero, the imperial matricide and incendiary.

But it is not to history alone that numismatology confines her assistance: the knowledge of ancient geography may be greatly increased by an attentive study of ancient medals. On many Greek coins the situation of the town where they were struck is inscribed, and particularly if near some noted river or mountain. Thus we have on a Magnesian coin ΜΑΓΝΗΤΩΝ ΣΙΠΥΛΑΟΥ proving Magnesia to be by mount Sipylus; and an Ephesian medal is inscribed ΕΦΕΣΙΩΝ, with ΚΑΙΣΤΡΟΣ on the exergue, showing Ephesus to have stood on the river Cayster. Many similar instances might be given on this head. The beautiful symbols on the Roman coins also merit the attention of the poet and the painter. Happiness is here represented (as on a gold coin of Severus) with heads of poppy, to express that large portion of our bliss which lies in the oblivion of misfortune; Hope is depicted as a young virgin walking quickly and looking intently forward; with her left hand holding up her garments that they may not impede her progress, and with her right presenting the bud of a

flower. Abundance is symbolised by a sedate matron with a cornucopia in her hands of which she scatters the fruit over the ground; not holding up the mouth of it as many painters make her do, as if to keep its contents entirely to herself. Security stands leaning on a pillar and the posture itself corresponds to her name. National prosperity is figured by a ship sailing before a favorable breeze; and the different countries of the then known world are delineated in all their interesting and striking peculiarities.

To a Briton it affords peculiar satisfaction to see his native island represented on imperial coins as a female sitting on a globe with the *labarum*, the symbol of power, in her hand, and the ocean rolling under her feet. Countries and rivers are also admirably personified on coins. On a colonial middle brass of rude execution, inscribed to Augustus and Agrippa, the conquest of Egypt is represented by the apposite symbol of the crocodile, esteemed at that period peculiar to that country, chained to a palm-tree, the emblem of triumph and a native symbol of Egypt. The emperor Titus having occasion to import a large supply of corn during a scarcity at Rome, that supply or *annona* is finely represented on one of his coins as a sedate matron, with a well filled cornucopia in her left hand, which she holds upright, to indicate that she cannot scatter it as Abundance may have right to do, but distributes it only as equity points out. This last particular is signified by her holding in her right hand a little image of justice, with her scales and *hasta pura* or pointless spear, over a basket filled with wheat. Behind the female figure is the prow of a ship decked with flowers, to imply that the corn was brought by sea (from Africa), and that the vessels had had a prosperous passage. No poet could present a finer train of imagery, no painter could convey more ideas in so small a compass.

The Roman medals likewise give us an excellent picture of the dress and arms of the times, and the shape of the toga may be as accurately learned from those of Hadrian as from any of the ancient statues. Their utility to natural history chiefly arises from the coins struck at the celebration of the secular games, on which the figures of various animals are preserved. On many of the Greek medals also lively representations of uncommon plants and animals may be seen: as the tortoise on the drachmas of *Egina*, the most ancient silver coin of Greece; and on most of the medals of Cyrene the celebrated plant called *sylphium*; as, on those of Tyre, the shell fish from which the famous Tyrian purple was procured. By means of medals also the exact delineations of many noble edifices are preserved, while not a vestige of their ruins even is in existence: so that the uses of them to the architect are very considerable. The skill displayed in the Greek sculpture has always been an object of admiration to the world, while their coins, equally worthy of attention, have been greatly neglected. Considered as mere works of art, they greatly excel those of Rome, even those of her best times; and the perfect beauty and tenderness of the female portraits, and the strength and expression of the male, are certainly

not exceeded by the larger efforts of the Grecian chisel. But in every respect the Roman coins are superior to those of the eastern nations, and, if any era were to be assigned as more eminent for workmanship than another, that from Augustus to Hadrian must have the preference.

SECT. I.—HISTORY OF NUMISMATOLOGY.

This study does not appear to be of an ancient date, and no mention is made of a medallic collection by classic writers. Suetonius, indeed, informs us that Augustus used on solemn occasions to present his friends with medals of foreign states and princes; and we know that individuals must have formed complete collections, for a complete set of silver coins was lately found in our own island containing all the emperors down to *Caracausius*, and similar collections have before been discovered in other parts of Europe. Such collections, however, were seldom made, as they were not esteemed valuable. A set of the coins indeed struck by the innumerable petty states using the Greek characters and language, could, at first, scarcely have been regarded as any acquisition; as they would have to a Greek the air of a domestic coinage, and be regarded with but little curiosity, however beautiful their impressions. Among the Romans, however, it was different. Banduri in his preface quotes *Ulpian* to show that certain coins were specially preserved among them, and it appears from the *Justinian* code that ancient gold and silver were used *pro gemmis*, for gems. From the decline of the empire the history of this science, with that of most others, is enveloped in darkness, till the revival of literature: or rather until the fall of *Constantinople* compelled the Greeks, the earliest children of science, to carry their learning into foreign lands.

Of modern authors, the first who attended systematically to the study of medals was *Petrarch*, who, being desired by the emperor *Charles IV.* to form a biography of illustrious men and place him on the list, with noble pride answered, that he would wait till the emperor's life and actions should deserve it. Taking occasion from this, he sent him a collection of medals in gold and silver with the following address:—*Ecce, Cæsar, quibus successisti. Ecce quos imitari studeas, et mirari: ad quorum formulam et imaginem te componas: quos præter te unum, daturus nulli homini sum, tua me movit auctoritas. Licet enim horum mores et nomina, horum ego res gestas novim, tuum est, non modum nosse, sed sequi: tibi itaque debentur.*—*Behold, Cæsar, whom thou hast succeeded. Behold whom you should study to imitate and admire, upon whose model and image you should mould yourself: these I should have given to no one but yourself, they were due to your situation of authority. I can only know the manners, names, and great deeds of these men; it is in thy power not only to know but to imitate them: and it is therefore thy duty.*

A collection of coins was made in the next century by *Alphonso* king of *Arragon*; but, although this monarch collected all that could be found throughout Italy, there could not have been very many, as the whole were contained in

an ivory cabinet, and carried always about with him. A very considerable collection was made by Anthony cardinal of St. Mark, nephew to Eugene IV., who was pope in 1431; and soon after the grand museum at Florence was begun by Cosmo de Medicis, where a collection of ancient coins and medals had a place among other curiosities. Matthias Corvinus, king of Hungary, about the same time, formed a noble collection of coins, along with ancient MSS. and other valuable relics of antiquity.

Mr. Pinkerton considers Agnolo Poliziano, or Angelus Politianus, as the first writer who adduced medals as vouchers of ancient orthography and customs. He cites different coins of the Medicean collection in his *Miscellanea*, written about 1490. By means of a cabinet of medals collected by Maximilian I. emperor of Germany, John Huttichius was enabled to publish a book of the lives of the emperors, enriched with their portraits, delineated from ancient coins. It is generally supposed that this book, which appeared in 1525, was the first work of the kind; but Labbe, in his *Bibliotheca Nummaria*, mentions another named *Illustrium Imagines*, by one Andrew Fulvius, printed in 1517, in which most of the portraits seem to be from medals. About 1512 also, William Bude, a French author, had written his treatise *De Asse*, though it was not printed till many years afterwards. M. Grollier, treasurer of the French armies in Italy, during part of the sixteenth century, had a great collection of coins in different kinds of metals. After his death his brass medals were sent to Provence, and were to have been sent into Italy; but the king of France, having received information of the transaction, gave orders to stop them, and purchased the whole at a very high price for his own cabinet of antiquities. M. Grollier had an assortment of gold and silver, as well as of brass medals: the cabinet in which they were contained fell two centuries afterwards into the hands of the abbé de Bothelin; and was known to have been that of Grollier, from some slips of paper, on which was his usual inscription for his books, *Johannis Grollerii et amicorum*.

Contemporary with Grollier was William de Choul, who was likewise a man of rank and fortune. He had a good collection of medals, and published many in his *Treatise on the Religion of the ancient Romans*, in 1557. In the Netherlands, we know, from the letters of Erasmus, that the study of medals was attended to about the beginning of the sixteenth century. About the middle of that century Hubert Goltzius, a printer and engraver, travelled over most countries in Europe, searching for coins and medals, to publish books concerning them. From one of these works it appears that there were then in the Netherlands 200 cabinets of medals; 175 in Germany; upwards of 380 in Italy; and 200 in France. But we are not to imagine that all these were grand collections; for of such there are not above a dozen even in Italy: most of those just mentioned were of the class named caskets of medals, containing from 100 to 1000 or 2000.

There are few countries, Italy excepted, in which a greater number of coins have been found

than in Britain; though we are by no means well acquainted with the time when the study of them commenced. Camden seems to have been one of the first British authors who published medals in his works, and probably had a small collection.

In the seventeenth century Sheed's Chronicle was illustrated with coins from Sir Robert Cotton's cabinet. Henry, prince of Wales, the eldest son of James I., bought the collection of Goriæus, amounting to 30,000 coins and medals, and left it to his brother Charles. Archbishop Laud bought a collection of 5500 coins, which he presented to the Bodleian library. Thomas, earl of Arundel and Surrey, earl marshal of England, had in his collection of antiquities a rich cabinet of medals, gathered by Daniel Nelsum. The dukes of Buckingham and Hamilton, Sir William Paston, Sir Thomas Fanshaw, Sir Thomas Hamner, Ralph Sheldon, Mr. Selden, and many more, are enumerated by Mr. Evelyn, as having collections. To this number we may add, the earl of Clarendon, the historian, and Charles I. The fine cabinet of this unhappy monarch was dissipated and lost in the civil commotions. Oliver Cromwell had also a small collection; and that of Charles II. is mentioned by Vaillant. Since the time of Mr. Evelyn many noble cabinets have been formed in this country, which our limits will not permit us to enumerate. The British Museum, lately enriched by some of those above mentioned, and the universities, have also collections; also the lawyers' library, and one or two colleges in Scotland; to which might be added private collections both there and in Ireland. But that of the late Dr. Hunter, bequeathed by him to the University of Glasgow, deserves notice, as one of the most considerable, if not the largest, in Europe. From the middle of the seventeenth century down to these times almost every year has produced some new work, or new discovery, in the science of medals.

Of writers on this science the following are the most worthy of notice:—Eneas Vico, who published in 1548 his *Discourses on the Coins and Seals of the Ancients*. His example was imitated in France by Antoine le Pois, who, in 1579, published a work on the medals of ancient Greece and Rome. In 1665 Charles Patin published his *History of Medals*, the last edition of which appeared in 1695. In 1692 Pere Jobert, or Joubert, presented to the public his *Science des Medailles*, the best edition of which is that of baron Bimard de la Bastie, 1759. Of those published by the father himself the first is undoubtedly the best; that of 1715, in 2 vols., being swelled only by the reveries of Pere Haradouin, whom Joubert wished to flatter. His own knowledge of coins was very limited, and he makes assertions at random without the slightest foundation. He asserts, for instance, that a sow on medals denotes Judea preserved by Vespasian, whereas it occurs on consular brass before the Romans had any connexion with Judea. In these it refers to the ancient method of ratifying treaties mentioned by Livy; as on the imperial coins it is meant to represent the sow with young found by Æneas the supposed founder of the Roman empire. Indeed, almost all the va-

hable notes of De la Bastie's edition are occupied with refutations of the errors of the author; so that what the reader imagines he has learned from the text, he finds, with perpetual chagrin, he has to unlearn in the notes. Had the baron given an entirely new work it would have been much more valuable. In the year in which Joubert published his treatise a work somewhat similar appeared in the English language, entitled *The Greek and Roman History illustrated by Medals and Coins* representing their religion, rites, &c., by O. W. (Obadiah Walker), London, 1692. In 1695 a translation of Joubert's work appeared, under the title of *The Knowledge of Medals*, also ascribed to Walker. The *Nomismata*, or *Discourse on Medals*, ancient and modern, by Mr. Evelyn, was printed in 1697, fol. but most of his observations are taken from Joubert, Vico, Le Pois, or Patin. In 1720 Nicolas Haym, an Italian musician, published in London his *Tesoro Britannico*, or *British Treasury*, in Italian and English. If but a letter appears on a coin, says Mr. Pinkerton, Haym can tell to what name that letter belongs; if but a nose, he will find a face to it; and, even if the coin is quite bare, to divine its ancient form costs him but a moment's thought. With the help of Diogenes Laertius he would find all the sages of Greece on old coins. He pretends to mark the rarity of several series of coins, but his statements cannot be relied on.

We have, in modern times, no work in which the writer has fully availed himself of the excellent public and private collections of this country: such a work is a desideratum which we hope to see shortly supplied; in the interim, those who wish to study this interesting science at greater length cannot do better than procure Mr. Pinkerton's *Essay on Medals*, 2 vols. 8vo.; after which they may turn to Frœlich's *Notitia Numismatum Urbium Liberum, Regum et Principum ac personarum illustrium*; to Vico's work already mentioned; and to Patin. The study of the Greek coins may be commenced with the *Historia Siciliæ Græciæ ex antiquis Numismatibus*, fol. of Goltzius, published at Antwerp in 1644. Gesner's *Thesaurus Numismatum*, Tiguri 1738, 2 vols. fol. may then follow. Dr. Combe's work on Dr. Hunter's Coins of Greek Cities, London, 1782, 4to., is one of the best of the kind; and of the Greek monarchic coins Gesner's will be found the most ample collection. The Roman consular coins are also fully described by Gesner; and descriptions may be found in Vaillant's *Nummi Antiqui Familiarum Romanorum*, Amsterdam, 1703, 2 vols. fol., or the *Thesaurus Morellianus*, Amsterdam, 1734, 2 vols. fol., a later and still better work. Gesner may also be referred to for the Roman imperial coins, with whom, for the rare coins, should be read Vaillant's *Numismata Imperatorum Romanorum*, published by Baldini at Rome, 1743, 3 vols. 4to.; Khell's *Numismata Imperatorum Romanorum*, Vindobonæ, 1767, 4to.; Banduri's *Numismata Imperatorum Romanorum*, a Trajano Decio usque ad Palæologos, Lutetie, 1718, 2 vols. fol.; and Occo's *Numismata Imperatorum Romanorum*, of which the best edition is the second of Occo himself.

We shall add in this place a brief account of the most celebrated public numismatical collections in Europe, of which that belonging to the king of France is by far the largest and most complete. The considerable treasures formerly collected by Boze, the marshal d'Etrées, Seguin, Patin, and in more modern times by Pellerin, are all incorporated with that valuable collection. Its basis was formed by Louis I. at Fontainebleau; Henry II., Louis XIII., and particularly Louis XIV. increased its treasures with royal munificence; and the last of the just mentioned monarchs caused the large medals of this cabinet to be engraved by de la Bossière. Besides the above mentioned collections, this cabinet acquired, in 1793, the Cabinet de St. Geneviève at Paris. An idea of the value of the present collection may be formed by the valuation made of it above half a century ago, which amounted to no less than 6,000,000 of livres. The Cabinet of St. Geneviève, which, having been threatened by robbers in 1793, was removed to the national library, and incorporated with the great collection, has been described by Claude du Molinet in 1692. The *Hunterian collection*, now in the possession of the university of Glasgow, is one of the most celebrated in Europe. The foundation of this collection was laid in the year 1770, from those of the Rev. Mr. Dawes and Thomas Sadler, Esq. The next year added much to the stock from various cabinets, particularly that of Isaac Jamineau, his majesty's consul at Naples. Mr. Sainthill, surgeon, in 1772; the prince of Peralta, and Mr. West, in 1773, continued to enrich Dr. Hunter's cabinet. In 1776 the Egyptian coins were much increased from the collections of Mr. Bruce and Lindegreene a Swede, who had resided in Egypt. Mr. Dorana added his collection to Dr. Hunter's in the same year, and it contained the accumulated treasures of many eminent scholars and antiquarians. At the same time Mr. White supplied, from his museum, those coins which were wanting in Dr. Hunter's; and, as if this year was to be distinguished by the value of the acquisitions and the characters of the benefactors, Dr. Russel supplied those deficiencies which his ample collection enabled him to discover. The year 1777 furnished still additional stores from Dr. Combe, a foreign nobleman, Mr. Swinton, Mr. I. Smith, the Rev. Dr. Eyre, and Mr. Samuel of Lincoln, and from numerous other benefactors. In the year 1782 Dr. Combe published his *Nummorum Veterum Populorum et Urbium qui in Museo Gulielmi Hunter Asservantur Descriptio*; a highly useful work, in which the Greek and Roman coins are arranged according to the different cities in which they were struck.

The very rich collection of coins and medals in the British Museum was formed from the cabinets of Sir Hans Sloane and Sir Robert Cotton, and has been from time to time enlarged by many valuable purchases and donations, but principally by the munificent bequest of the Rev. C. M. Cracherode. It is comprehended under the three following heads:—1. Ancient coins; 2. Modern coins; 3. Medals. The first of these heads consists of Greek and Roman coins. The Greek coins are arranged in geographical order,

and include all those which are struck with Greek characters, in Greece, or elsewhere, by kings, states, or cities, which were independent of the Romans. With this class are placed, likewise, the coins of free states and cities, which made use of either the Etruscan, Roman, Punic, Spanish, or other characters. The Roman coins are placed, as far as it can be ascertained, in chronological order. They consist of the As in its divisions; family or consular coins; imperial coins struck in Rome; imperial coins struck in Egypt; imperial coins struck in the Roman colonies; imperial coins struck with Punic characters; contorniates. The second head, comprising modern coins, consists of Anglo-Saxon, English, Anglo-Gallic, Scotch, and Irish coins, and likewise the coins of foreign nations. This class is arranged according to the respective countries to which the coins belong, those of each country being kept separate.

The third head, which comprises a class considerably more modern than either of those which precede it, consists of medals struck in our own country, and of those which have been struck abroad. These are arranged in the same manner as the modern coins. The celebrated imperial collection of coins at Vienna, if we except that of Paris, stands unrivalled among the cabinets of the continent. It was begun by the emperor Ferdinand I., and soon considerably increased by the accession of other collections, such as that formed by the archduke Albert, under the direction of the Chiffets; and the most valuable collection formed by the archduke Ferdinand at Ombras in Tyrol. It was afterwards considerably added to by the collections of the learned monarchs Maximilian I. and Rudolph II.; but particularly by the zeal of the emperor Charles VI., who was himself a great lover of numismatology, and who purchased the cabinets of the Carthusians at Rome, together with that of count Parr.. In the reign of Maria Theresa it was farther increased by the purchase of the Granelli collection. Several years ago the number of coins and medals of this collection amounted to upwards of 40,000, of which about 22,000 were antique. We possess a masterly catalogue of the Vienna collection by the celebrated Joseph Eckhel, published as early as 1779, and therefore far from giving a correct idea of the present state of that highly valuable repository.

The Prussian cabinet of medals is considered the greatest in Germany, next to the Imperial collection of Vienna. The celebrated Laurent Beger published a catalogue of this collection, in 3 vols. folio, entitled *Thesaurus Brandenburgicus Selectus, Coloniae Marchicae*, 1696, 1699, and 1701. Though king Frederick William I. took out a number of large gold coins (among which was the very large one, eight pounds, or 500 ducats in weight, bearing the portraits of Frederic William the Great, and his queen), which were converted into small current money, yet the collection is still richly furnished: the number of its antique treasures having been increased by 6000 coins from the cabinet of the late margrave of Anspach.

Next in importance among the numismatological collections of Germany is that of Gotha, the

basis of which was formed by Ernest the Pious. It was materially increased by the excellent Arnstadt cabinet of medals, which was formed by Antony Gunther, prince of Schwarzburg, assisted by several celebrated antiquaries and historians, such as Andreas Morellus, Christian Schlegel, Olearius, &c. This latter collection was purchased, in 1713, by John Frederick, duke of Saxe-Gotha, for the sum of 100,000 dollars. It is preserved in small cabinets, each of which is placed on a table, furnished below with a shelf for books relative to the coins above. This celebrated collection has been at different times considerably increased by others, such as those of Schachman and Sultzer, that of Mr. Gerning, rich in scarce Greek coins, that of baron Seckendorf, &c. The coins in the Gotha collection are still arranged after the old way, by the sizes and metals, and the same mode is adopted in the catalogue, seven volumes of which comprise the antique coins as follows: gold coins, kings; coins of cities and free states; coins of families; imperial silver; coins of first size; coins of second and third size.

SECT. II.—MANUFACTURE OF ANCIENT COINS AND MEDALS, WITH A GENERAL DESCRIPTION OF THEM.

The ancient methods of coining appear, from the coins themselves, and from the instruments sometimes represented on their reverses, to have been extremely simple. Of the Grecian mint we know comparatively nothing; but from the extreme beauty of the workmanship of its coins, and the purity of metal they exhibit, we may conclude that no small share of attention was devoted to their manufacture. Among the Romans we know the mint was regarded as one of the most important offices of the state, and was therefore placed under the direction of the questor, who also had the control of the treasury. About B. C. 266, when silver was first coined in Rome, the triumviri monetales appear to have been first appointed, and their office continued till the time of Caracalla. They were originally chosen from the senatorial order, but in the time of Augustus they were taken also from the equestrian, and we find them noticed on one of the coins of that emperor as III VIR. A. A. A. F. F. *Triumviri, Auro, Argentio, Cere, Flando, Feriundo*, triumviri, for melting and striking gold silver and brass. Under Aurelian there appears to have been but one master of the mint, called the rationalis, who was soon after styled procurator monetæ. In the colonies the direction of the coinage appears to have been entrusted to duumviri, whose names often occur in colonial pieces, and who were chosen annually like the consuls at Rome. The other officers of the Roman mints were the assayers, *spectatores*, or *nummularii*; the engravers of the die, *celatores*; the refiners, *cenarii*; the melters, *fusarii*, or *staturarii*; the equatores monetarum, who adjusted the weight; the suppostores, who placed the pieces in the die; and the malleatores, who struck it. A prunicerius was at the head of each office, and there was a kind of foreman called *optio et exactor*.

Gold and silver in their unmixed state were

early found too flexible and soft for general use, and hence arose the necessity of mixing with them a certain quantity of harder metal as alloy. The quantity or proportion of this alloy is various in different ages and countries. The most ancient gold coins existing, those of Lydia and other states in Asia Minor, are not of the purest gold, many not being above twenty carats fine. Many of the earliest coins seem to be formed of the metal anciently called electrum, and consisting of gold and silver. But when Philip, the father of Alexander the Great, coined the first Grecian gold, procured from the mines of Philippi, the art of refining gold had attained great perfection, and his coins are of the utmost purity. They are rivalled, however, by those of his son Alexander, and of other princes and cities within a few centuries of that age. The gold coins of the Egyptian Ptolemies are twenty-three carats three grains fine, with one grain alloy. The Roman gold coinage is very pure from the earliest times, and remained in this state till the reign of Severus. Most of the Roman gold was from Dalmatia and Dacia, where this metal is still found. Pliny says that the gold was refined by mercury, which mingled with it but rejected alloy, and the gold was afterwards delivered from the mercury by squeezing it in skins, when the mercury ran through and left behind the gold pure. In his time, indeed, the gold coins were very fine; and Boden tells us, that the goldsmiths of Paris, upon melting one of Vespasian's gold coins, found only $\frac{1}{16}$ part of alloy.

Most of the ancient silver, particularly that of Greece, is less pure than that of succeeding times; even the Roman silver is rather inferior to the present standard; but, in the time of Severus, the silver appears very bad, and continues so until the time of Dioclesian. Many writers upon this subject have mistaken the *denarii ærei*, 'coins of brass washed with silver,' for silver currency. Silver coins are extremely scarce from the time of Claudius II. to that of Dioclesian, or from A.D. 270 to 284; in which short space no fewer than eight emperors reigned. Silver at that time was found mostly in Spain; and such were the troubles of the times, that both the silver and gold coins of those eight emperors are extremely scarce. There is still, however, some silver extant of these eight emperors. Occasional deprivations of silver had taken place long before; as Pliny tells us that Mark Antony mixed iron with his silver *denarii*; and Mr. Pinkerton informs us that he had seen a *denarius* of Antony which was attracted by a magnet.

The ancient brass coins are of two kinds: the red or Cyprian, which indeed is no other than copper; and the common yellow brass. In the Roman coinage brass was double the value of copper; and it was probably the same among the Greeks: the latter is the metal most commonly made use of in the Greek coinage. The Roman *sestertii* are always of brass; the middle-sized kind are partly copper and partly brass; the former being double the value of the latter, which are the asses. As the medals of these metals are always covered with platina the difference has not excited attention.

Of the mixed metals beside electrum the most valuable was the Corinthian brass, which however does not appear to have been used at all in the fabrication of medals. Besides the authority of Pliny and other antiquaries of more modern date, who all declare that they never saw a single medal of Corinthian brass, or of that metal mixed with silver and gold, Mr. Pinkerton adduces other evidence which he looks upon to be superior to either, viz. that those who have advanced this opinion imagine that the large pieces called *sestertii*, and others called *dupondiarii*, worth about two-pence or a penny, are said to have been composed of this precious metal. It is unreasonable to think that any proportion of gold or silver could have been made use of in these. The coins said to have been struck upon Corinthian brass are only done upon a modification of common brass; of which we know, that, in proportion to the quantity of zinc made use of in conjunction with the copper, the metal assumes a variety of hues. Pliny says that the coins mistaken for Corinthian brass were no other than prince's metal.

The Egyptian silver coins struck under the Roman emperors are at first of tolerably pure silver; but afterwards degenerate into a mixture of copper and tin with a little silver, styled by the French *potin*. They are very thick, but many of them are elegantly struck, with uncommon reverses. There are likewise three sets of brass coins belonging to this country from the earliest times of the Roman emperors there. Some of these are of bell-metal or pot-metal; and after the time of Gallienus and Valerian, the coinage of brass with a small addition of silver became authorised by the state; the coins struck upon it being called *denarii ærei*. Those of lead or copper plated with silver have been fabricated by Roman forgers. Some coins of lead, however, have been met with of undoubted antiquity: and an ancient writer informs us that tin money was coined by Dionysius; but none has been found. The lead coins of Tigranes, king of Armenia, mentioned as genuine by Jobert, are accounted forgeries by modern medallists. Plautus, however, makes mention of leaden coins, and several of them have been found; but they are generally thought to have been chiefly essay pieces, struck in order to let the artist judge of the progress of the die. Others are the plated kind already mentioned, fabricated by ancient forgers, but having the plating worn off. A great number of leaden coins are mentioned by Ficorini in a work entitled *Piombi Antichi*, in which he supposes them to have served as tickets for guests; and coins of the same kind are also mentioned by Passeri.

Whatever the metal of which the coins were composed, the Roman moneyers cast it into a round bullet, in order to assist the high relief, as appears from the ancient coins not being cut or filed at the edges, but often cracked; and always rough and unequal. In modern coinage the blank pieces are flat, and cut round by the stroke of a machine, a plan followed even in the seventh and eighth century; but the hammered coin of the ancients appears never to have been cut. The bullets were put into the die, and

received the impression by repeated strokes of the hammer, though sometimes a machine appears to have been used for this purpose: for Boiterue informs us that there was a picture of the Roman mintage, in a grotto near Baia, where a machine was represented holding up a large stone, as if to let it fall suddenly, and strike the coin at once. None of the ancient money was cast in moulds, excepting the most ancient and very large Roman brass, commonly called weights, and other Italian pieces of that sort; all the rest being mere forgeries of ancient and modern times. Some Roman moulds which have been found are a proof of this; and from these some medallists have erroneously imagined that the ancients first cast their money in moulds, and then stamped it, in order to make the impression more clear and sharp.

The ancients had some knowledge of crenating the edges of their coins, which they did by cutting out regular notches upon them; and of this kind we find some of the Syrian and ancient consular coins, with a few others. The former were cast in this shape and then struck; but the latter were crenated by incision, to prevent forgery, by showing the inside of the metal: however, the ancient forgers also found out a method of imitating this; for Mr. Pinkerton informs us that he had a Roman consular coin of which the incisions, like the rest, were plated with silver over the copper.

As most medals and coins have a portrait on one side, that side is called the face or obverse, the opposite the reverse. The field is the interior space, which is enclosed nearly all round by the rim, except the bottom part, called the exergue, which is commonly separated from the field by a line upon which the figures of the reverse stand. Most medals contain, besides the portrait and other figures, also letters or words illustrative of some circumstance concerning them. If these letters or words occupy the field, they are denominated inscriptions; but if they run round the margin, or upon either side of the figures, or upon the exergue, they are more properly denominated legends.

In large cabinets medals are generally chronologically arranged under the separate heads of gold, large and small; silver, large and small; and brass, large, middle, and small; which are not so much distinguished by the breadth or thickness of the medal itself, as by the size of the head stamped upon it. But beside the ordinary coins of the ancients, which passed in common circulation, there were others of a larger size, which are now termed medallions. These were struck on the commencement of the reign of a new emperor, and other solemn occasions; frequently also, by the Greeks in particular, as monuments of gratitude or of flattery. Sometimes they were mere trial or pattern pieces; and those about after the time of Maximilian, with the words *Tres Monete* on the reverse. The common opinion is, that all the Roman pieces of gold exceeding the *denarius aureus*, and all in brass exceeding the *sestertius*, went under the denomination of medallions; but many of these large pieces went in circulation, though not very commonly. The finest medallions

were presented by the mint-masters to the emperor, and by the emperor to his friends, as specimens of workmanship. The best we have at present are of brass, and many of them composed of two sorts of metal; the centre being copper, with a ring of brass around it, or the contrary; and the inscription is sometimes confined to one of the metals, sometimes not. There is a remarkable difference between the Greek and Roman medallions in point of thickness; the latter being frequently three or four lines thick, while the other seldom exceed one. Very few medallions, however, were struck by the Greeks before the time of the Roman emperors; but the Greek medallions of the emperors are more numerous than those of the Romans themselves.

All these pieces, however, are of such high prices, that few private persons are able to purchase them. In the seventeenth century, Christina, queen of Sweden, procured about 300. In the king of France's collection there have been reckoned 1200, a number formerly supposed not to exist; but Dr. Hunter's collection contains about 100, exclusive of the Egyptian.

Besides these large pieces, there are smaller ones of a size somewhat larger than our half-crowns; and by Italian medallists are called *medaglioncini*, or small medallions. They are still scarcer than the large kind.

There is still a third kind, which have almost escaped the notice of medallists, viz. the small coins or *missilia* scattered among the people on solemn occasions; such as those struck for the slaves on account of the *Saturnalia*; counters for gaming; tickets for baths and feasts; tokens in copper and in lead, &c. Many, or perhaps almost all, of those struck for the *Saturnalia* were satirical; as the slaves had then a license to ridicule not only their masters, but any person. One of the most common pieces of this kind has on the obverse the head of an old woman veiled, with a laurel crown; the reverse only s. c. within a wreath.

A fourth class of medals are called *contorniat*, from the Italian *contorniato*, encircled, because of the hollow circle which commonly runs around them. They are distinguished from medallions by their thinness, faint relief, reverses sometimes in relief, sometimes hollow, and in general by the inferiority in their workmanship. The opinions of medallists concerning these pieces are very various: some suppose them to have been struck by Gallienus to the memory of illustrious men and celebrated athletes, at the time that he caused all the consecration coins of his predecessors to be restored; others ascribe their invention to Greece, &c.; but Mr. Pinkerton is of opinion that they were only tickets for places at public games. Many of them, notwithstanding their inferior workmanship, are very valuable, on account of their preserving the portraits of some illustrious authors of antiquity no where else to be found, though some think much dependence cannot be put on them. They, however, are valuable, as being ancient, and perhaps traditional portraits of these great men.

The usage of coining money for the imme-

date of a blockaded town is very ancient.

The medals thus struck are called obsidional, and generally bear in their fabrication and material evidences of the calamitous and bereaved condition which gave rise to their existence. They are mostly of bad metal, and rudely formed, an observation to which some exceptions of course occur, but they are not numerous. The shape of these coins or medals varies:—sometimes they are round, sometimes oval, sometimes square; occasionally, even, octagon or triangular, &c. The type and inscriptions vary equally. Some are engraved on both sides, which however is rare; by far the greater part having no reverse. It is more common to see the name of the town only (either entire or abridged) with the date and value.

Their different thickness forms a remarkable distinction between the Greek and Roman medallions; the Roman being often three or four lines thick, while the others seldom exceed one. By the Greek medallions we mean those struck in the imperial periods; for few Greek medallions are found prior to the emperors of Rome. But there is a fine one struck at Syracuse, upon the defeat of Ictas by Timoleon. The medallion is of silver, with the head of Ceres upon one side, and upon the other a female figure, perhaps representing Sicily or Syracuse, in a car, a victory crowning her, and spoils in the exergue. Its workmanship is fine, but not equal to that of the gold coin of the same Ictas, struck at Syracuse, ΕΙΛΗ ΙΝΕΤΑ, under Ictas, which is a perfect gem surpassing all description. Syracuse also affords a most remarkable medallion on another great occasion. The only one perhaps existing formerly belonged to Dr. Combe, and was engraved by his order. It is exquisitely wrought, in high relief, and perfect preservation; of copper, and about two inches in diameter. Upon one side is a female head, covered with a helmet, on which is a caduceus and roma. Upon the other is a man's head, with a helmet wreathed with laurel, and M. M. Dr. Combe thinks this fine piece, now in Dr. Hunter's cabinet, was struck by Syracuse, in honor of Marcus Claudius Marcellus, who besieged and took that city, 210 years B. C. This medallion is most remarkable for its being unique; for its beauty, for its preservation, and for the portrait of this great man. These are perhaps the only Greek medallions prior to the Roman empire.

As for the ornaments of portraits, the chief is the diadem, or vitta, a ribbon worn about the head, and tied in a floating knot behind, the ancient simple badge of kingly power. It is observable upon the Greek monarchic medals, from the earliest ages to the last; and is almost an infallible sign of the portrait of a prince. In the Roman coins it is seen on the consular one with Numa and Ancus; but never after till the time of Licinius.

The Romans had such an abhorrence of this badge of kingly distinction, that their emperors had, for two centuries, wore the radiated crown, peculiar to the gods, before they dared to assume this tyrannic badge. However, in the family of Constantine, the diadem became common, but divested of its ancient simplicity; be-

ing ornamented on either side with a row of pearls, and various other decorations. The radiated crown, at first, as in the posthumous coins of Augustus, a mark of deification, was, in little more than a century after, put upon most of the emperors' heads in their several medals. The crown of laurel, at first the honorary prize of conquerors, was afterwards commonly worn, at least in their medals, by all the Roman emperors from Julius, who was permitted by the senate to wear it always, in order to hide the baldness of his forehead. In the lower empire, the laurel is often held by a hand above the head, as a mark of piety. Agrippa appears on his coins with the rostral crown, a sign of naval victory or command, being made of gold, in resemblance of prows of ships tied together. He is likewise seen with the mural or turreted crown, the prize of first ascending the walls of an enemy's city. The oaken, or civic crown, is frequent on reverses, as of Galba and others; and was the badge of having saved the life of a fellow citizen, or of many citizens. See CROWN. Besides the diadem, the Greek princes sometimes appear with the laurel crown. The Arsacids, or kings of Parthia, wear a kind of sash round the head, with their hair in rows of curls like a wig. Tigranes, and the kings of Armenia, wear the tiara. Xerxes, a petty prince of Armenia, appears on a coin in a conic cap, with a diadem around it. Juba, the father, has a singular crown, like a conic cap, all hung with pearls.

The successors of Alexander assumed different symbols of deity on the busts of their medals; such as the lion's skin of Hercules, surrounding the head of the first Seleucus; the horn placed behind the ear, an image of their strength and power, or of their being the successors of Alexander, called the son of Jupiter Ammon; the wing, placed in like manner behind the ear, symbolic of the rapidity of their conquests, or of their descent from the god Mercury, &c. Pyrrhus, as Plutarch informs us, had a crest of goat's horns to his helmet; and the goat was a symbol of Macedon. The successors of Alexander might take this badge on that account. The helmet also appears on coins, as in those of Macedon, under the Romans, which have Alexander's head, sometimes covered with a helmet. Probus has the helmet: and Constantine I. has helmets of different forms, curiously ornamented.

The Greek queens have the vitta or diadem. Most queens of Egypt have the sceptre. The Roman empresses never appear with the diadem, the variety of their head-dresses compensating the want of it. The remarkable part of the Roman head-dress among the ladies was the sphendon, or sling, on the crown of the head, which was of gold, and so prominent as to be even remarkable on a coin. Sometimes the bust of an empress is supported by a crescent, denoting that she was the moon, as her husband was the sun of the state. There are other symbolic ornaments of the head observable on some Roman coins. Such is the veil, or rather toga, drawn over the head, and seen on the busts of Julius Cæsar, when Pontifex Maximus, and others. Latterly the veil was only a mark of consecration, and is common on coins of em-

presses, as *Faustina* and others. In the coins of *Claudius Gothicus* it is first found as a mark of the consecration of an emperor; and it was continued in those of *Constantius I.*, *Maximian I.*, and *Constantine I.* 'These coins,' says Mr. *Pirkerton*, 'rank with those that are valuable for their rarity.'

The nimbus, or glory, now peculiar to the saints, was formerly applied to emperors. A nimbus appears round the head of *Constantine II.*, in a gold coin of that prince, and of *Flavia Maxima Faustina*, in a gold medallion; and of *Justinian* in another. But the idea is as ancient as the reign of *Augustus*. *Havercamp* gives a singular coin, which has upon the reverse of the common piece with the head of *Rome*, *URBS ROMA*, in large brass. *Constantine I.*, sitting amid victories and genii, with a triple crown upon his head, for *Europe*, *Asia*, and *Africa*: legend *SECURITAS ROMÆ*. The bust alone is generally given on ancient coins; but sometimes half the body, or more; in which latter case the hands often appear, with tokens of majesty in them. Such is the globe, said to have been introduced by *Augustus*, to express possession of the world; the sceptre, sometimes confounded with the consular staff; the roll of parchment, symbolic of legislative power; and the handkerchief, expressing that of the public games, where the emperor gave the signal. Some princes hold the thunderbolt, showing that their power on earth was equal to that of *Jupiter* in heaven. Others hold an image of victory.

The reverses of medals contain figures of deities at whole length, with their attributes and symbols; public buildings and diversions; allegorical representations; ceremonies civil and religious; historical and private events; figures of ancient statues; plants, animals, and other subjects of natural history: ancient magistracies, with their insignia; and, in short, almost every object of nature or art. Some reverses bear the portrait of the queen, the son, or the daughter of the prince who appears on the obverse. Such are highly esteemed by antiquaries, not merely because coins stamped with portraits on both sides are valuable, but because they identify the personage on the reverse to have been the wife, the son, or the daughter, of such a particular prince, and thus help in the adjustment of a series. Some medals with two portraits are very common; such are *Augustus* reverse of *Caligula*, and *M. Aurelius* reverse of *Antoninus Pius*. The reverses of the Roman coins have more of art and design than the Greek; but the Greek have more exquisite relief and workmanship than the other. In the very ancient coins no reverse is found except a rude mark struck into the metal, as of an instrument with four blunt points, on which the coin was struck. Afterwards, by degrees, we see some little image of a dolphin, or other animal, inserted into one of the departments of the rude mark, or into a hollow square. Then follows a perfect reverse of a horse, or the like, with a slight mark, and at length without any mark, of the hollow square. Some ancient Greek reverses are struck in intaglio, not in cameo; hollow, not

relief. Such are those of *Caulonia*, *Crotone*, *Metapontum*, and some other ancient cities of *Græcia Magna*. These reverses sometimes bear the same type in intaglio which the obverse has in cameo; and sometimes they are quite different. When complete reverses appear on the Greek coins, about 500 years B.C., they are of exquisite relief, minute finish, and beauty. The very muscles of men and animals are seen, and will bear inspection with the largest magnifier, as ancient gems.

Of Roman coins the reverses are very uniform, the prow of a ship, a car, or the like, till about 100 years B.C., when various reverses appear on their consular coins in all metals. The variety and beauty of the Roman imperial reverses are well known. The medallist much values those which have a number of figures, as the *Puella Faustinae* of *Faustina*, a gold coin no larger than a sixpence, which has twelve figures: that of *Trajan*, '*Regna adsignata*,' which has four: the '*Congiarium*' of *Nerva*, with five: the '*Alloccutum*' of *Trajan* with seven; of *Hadrian*, with ten; of *Probus*, with twelve. Some Roman medals, to which no peculiar name has been appropriated by medallists, have small figures on both sides, as the '*Apolloni Sancto*' of *Julian II.* Others have only a reverse, as the noted '*Spintriat*,' which have numerals *I. II. &c.* on the obverse.

The figures of deities and personifications on the Roman coins are commonly attended with their names, besides being distinguished with their attributes. These names, without an adjunct, are put down merely because it was necessary that the coin should have a legend. Thus, in a coin of *Lucilla*, *Venus*, though well known by the apple which she always holds in her hand, has nevertheless the name round her, *Venus*, without any addition. But an adjunct is most commonly added, and this renders the insertion of the name very proper and necessary, as in the instance of a *Neptune*, with *Neptuno reduci*:—a *Venus*, with *Veneri victrici*, and others similar. The like may be said of the coins with a figure of modesty, *pudicitia Augustæ*; of virtue, *virtus Augusti*, &c.; for it is the legend which appropriates the virtue to the emperor or empress, and thus leaves no doubt as to the meaning of the reverse.

In the Greek coins a superior delicacy is observed by not expressing the name of the deity, but leaving it to the easy interpretation of fixed symbols.

The principal symbols of the divine attributes to be met with on the Greek medals are as follow:—

1. *Jupiter* is known on the coins of *Alexander the Great* by his eagle and thunderbolts: but, when the figure occurs only on the obverses of coins, he is distinguished by a laurel crown, and placid bearded countenance. *Jupiter Ammon* is known by the ram's horn twisting round his ear; a symbol of power and strength assumed by some of the successors of *Alexander the Great*, particularly by *Lysimachus*.

2. *Neptune* is known by his trident, dolphin, or being drawn by sea-horses; but he is seldom met with on the Grecian coins.

3. Apollo is distinguished by a harp, branch of laurel, or tripod; and sometimes by a bow and arrows. In the character of the sun his head is surrounded with rays; but, when the bust only occurs, he has a fair young face, and is crowned with laurel. He is frequent on the coins of the Syrian princes.

4. Mars is distinguished by his armour, and sometimes by a trophy on his shoulders. His head is armed with a helmet, and has a ferocious countenance.

5. Mercury is represented as a youth, with a small cap on his head, wings behind his ears, and on his feet. He is known by the cap, which resembles a small hat; and the wings. He appears also with the caduceus, or wand, twined with serpents, and the marsupium, or purse, which he holds in his hand.

6. Æsculapius is known by his bushy beard, and his leaning on a club with a serpent twisted round it. He sometimes occurs with his wife Hygeia or Health, with their son Telesphorus or Convalescence between them.

7. Bacchus is known by his crown of ivy or vine, his diadem and horn, with a tiger and satyrs around him.

8. The figure of Hercules is common on the coins of Alexander the Great, and has frequently been mistaken for that of the prince himself. He appears sometimes as a youth, and sometimes with a beard. He is known by the club, lion's skin, and remarkable apparent strength; sometimes he has a cup in his hand; and a poplar tree, as a symbol of vigor, is sometimes added to the portrait.

9. The Egyptian Serapis is known by his bushy beard, and a measure upon his head.

10. Apis is delineated in the form of a bull, with a flower of the lotos, the water lily of the Nile, supposed by Macrobius to be a symbol of creation; and Jamblicus tells us that Osiris was thought to have his throne in it.

11. Harpocrates, the god of silence, appears with his finger on his mouth; sometimes with the sistrum in his left hand; a symbol common to most of the Egyptian deities.

12. Canopus, another Egyptian deity, appears in the shape of a human head placed on a kind of pitcher. See CANOPUS.

13. The Holy Senate and Holy People appear frequently on Greek imperial coins, sometimes represented as old men with beards, on others as youths.

The goddesses represented on medals are,

1. Juno, represented by a beautiful young woman, sometimes with a diadem, sometimes without any badge, which is reckoned a sufficient distinction, as the other goddesses all wear badges. Sometimes she appears as the goddess of marriage; and is then veiled to the middle, and sometimes to the toes. She is known by the peacock, a bird sacred to her from the fable of Argus.

2. Minerva is very common on the coins of Alexander the Great; and her bust has been mistaken by the celebrated painter Le Brun for the hero himself. Her symbols are her armour; the spear in her right hand, and the ægis with a

Mecusa's head in her left; an owl commonly standing by her.

3. Diana of Ephesus is commonly represented on the Greek imperial coins; and appears with a great number of breasts, supposed to denote universal nature. She is supported by two deer, and carries a pannier of fruit upon her head. The bust of this goddess is known by the crescent on her brow, and sometimes by the bow and quiver at her side.

4. Venus is known by an apple, the prize of beauty, in her hand. Sometimes she is distinguished only by her total want of dress; but is always to be known by her extraordinary beauty, and is sometimes adorned with pearls about the neck.

5. Cupid is sometimes met with on the Syrian coins, and is known by his infancy and wings.

6. Cybele is known by a turreted crown and lion; or is seen in a chariot drawn by lions.

7. Ceres is known by her garland of wheat, and is common on the Sicilian coins; that island being remarkable for its fertility. Sometimes she has two serpents by her, or is drawn in a chariot by them. She carries in her hands the torches, as if in search of her daughter Proserpine.

8. Proserpine herself is sometimes met with on coins with the name of *κορη*, or the girl.

9. The Egyptian Isis has a bud or flower on her head; a symbol of the perpetual bloom of the inhabitants of heaven. She carries also a sistrum in her hand.

10. The Sidonian Astarte appears on a globe supported on a chariot with two wheels, and drawn by two horses.

These are the deities most commonly represented on the Greek coins. The more uncommon are, Saturn with his scythe, or with a hook on the Heracleian coins; Vulcan with his tongs, on the reverse of a coin of Thyatira, represented at work in the presence of Minerva. Adranus, a Sicilian god, is sometimes represented on coins with a dog. Anubis, an Egyptian deity, has a dog's head. Atis is known by his Phrygian bonnet; Castor and Pollux by a star on the head of each; Pluto by his old face, dishevelled hair and beard, and a hook; Flora by a crown of flowers; Nemesis by her wheel; and Pan by his horns and ears of a beast.

There are likewise to be found on medals many different symbols by themselves; of which we subjoin a list, with their significations:—

1. Vases with sprigs signify solemn games. 2. Small chest or hamper, with a serpent leaping out, mystic rites of Bacchus. 3. Anchor, on Seleucian medals, coin struck at Antioch, where an anchor was dug up. 4. Apollo, on Syrian coins, on an inverted hamper, covered tripod. 5. A bee, Aristeus, the son of Apollo. 6. Laurel, Apollo. 7. Reed, a river. 8. Ivy and grapes, Bacchus. 9. Poppy, Ceres and Proserpine. 10. Corn, Ceres. 11. Owl and olive, Minerva. 12. Dove, Venus. 13. Torch, Diana, Ceres, or Proserpine. 14. Mudnis, or conic stone, the Sun, Belus, or Venus. 15. Pomegranate flowers, Rhodes. 16. Owl, Athens. 17. Pegasus, Corinth. 18. Wolf's head, Argos. 19. Bull's

head, Boeotia. 20. Minotaur's head and labyrinth, Crete. 21. Horse's head, Pharsalia. 22. Lion, Marseilles. 23. Tortoise, Peloponnesus. 24. Sphinx, Scio. 25. Three legs joined, Sicily. 26. Horse, Thessaly. 27. The crescent, Byzantium. 28. Ensign, with the letters COL., a colony drawn from one legion. 29. Bull, Apis, strength or security. 30. Caduceus, Peace and concord. 31. Cornucopia, Abundance. 32. Parazonium, baton of command. 33. Globe on an altar with three stars, the world preserved by the gods for the three sons of Constantine I. 34. Fort and gate, Security. 35. Altar or tripod, Piety. 36. Dolphin, Apollo. 37. Lectisternia, festivals. 48. Lituus, or twisted wand, Augurship. 39. Apex, or cap with strings, pontificate. 40. Thensa, or chariot employed to carry images, consecration of an empress. 41. Peacock, ditto. 42. Eagle, consecration of an emperor.

The most remarkable symbols of countries and cities on Greek coins are, for Rhodes, the flowers of the pomegranate: for Athens the owl: for Corinth a pegasus: for Argos a wolf's head: for Boeotia a bull's head: for Crete a minotaur's head, and the labyrinth: for Pharsalia a horse's head: for Marseilles a lion: for Peloponnesus a tortoise: for Scio a sphinx: for Sicily three legs joined: and for Thessaly a horse. The badge of Byzantium was the crescent, which appeared early on the coins of Byzantium, with the legend *BYZANTINÆ EQT.*; the preserver of Byzantium. The occasion was this; when Philip of Macedon besieged Byzantium, and was proceeding to storm it in a cloudy night, the moon shone out, and discovered his approach, so that the inhabitants observed and repulsed him. The Turks, upon entering Constantinople, found this ancient badge in many places; and, suspecting some magical power in it, assumed the symbol and its power to themselves; so that the crescent is now the chief Turkish ensign. The bull is very frequent on Greek coins, generally signifying a river, on which the country or town was situated: accordingly, the river Achelous is called *Βουκεφάλος*, or bull-headed, by Sophocles in Trachin, v. 13: and Cephissus is said to have *ταυρομορφον ὄμμα Κηφισὸν παρὰ* by Euripides, Ion. v. 1261. The Latin poets speak of the horns of rivers; thus Horace describes the Aufidus, 'Sic tauriformis volvitur Aufidus.' The bull was a token of fertility, but the horns seem to allude to the force of the stream, &c.

SECT. III.—A CHRONOLOGICAL EXAMINATION OF ANCIENT COINS, MEDALS, &c.

The origin of coinage is too remote to be accurately traced. In the earliest ages in which metal was used as a medium of traffic, it is most probable that each person weighed or cut his gold or silver into pieces of different size and form, according to the quantity to be given for any merchandise he was desirous of purchasing. By degrees it was found more commodious to have pieces ready weighed; and as there were different weights required, according to the value of the different wares, all those of the same weight began to be distinguished by the same mark: thus coins were carried onward one step.

At length the use of money in commerce beginning to be disturbed by frauds, both in the weight and in the metal, public authority interposed, and hence arose the first stamps or impressions of money, to which succeeded the names of the moneyers and the effigy of the prince, the date, legend, &c., and thus the art was complete.

Herodotus ascribes the invention of coins to the Lydians, and Pliny to Bacchus; but it is evidently too remote an event to be traced to any authentic source. Lycurgus ordered that iron money only should be used in Sparta, which seems to imply that before his time a better kind had been known, and the introduction of copper coin into Italy is ascribed to Janus or Saturn. Before his invasion of Italy their money consisted of pieces of lead of certain weight and size. Homer, who wrote about 850, mentions scales, in the manner they seem to be mentioned in the book of Genesis (see our article COINS), but says nothing of money. If we look further east, says Mr. Pinkerton, there are three or four great nations who might be supposed capable of claiming this invention, namely, the Assyrians, Medes, Phœnicians, Indians, and Chinese: for the Persians are out of the question, as their empire began not till 570 years before Christ. The Assyrians, a great nation of the same race and speech with the Arabs and Phœnicians, conquered the Scythians, or oldest Persians, about 2220 years before Christ, and established the Assyrian empire; which lasted till the Medes, 920 years before our era, seized the north of present Persia; and in Babylon and the south, till Cyrus, about 570 years before Christ, established the Persian empire on the ruins of both Median and Babylonian. But certain it is that no coins are found which can be even imagined to belong to Assyrian, Median, or Babylonian kings; their empire, though rich in itself, was unknown in commerce; and weight alone, according to Scripture, was used in estimating metals. The oldest coins found in that part of the world are palpably Persian, and similar to the Greek.

The Phœnicians, a people famous for ancient civilisation, appear not to have coined money, till after the Greeks had set the example. No Phœnician coins are found of much antiquity; and not one without both obverse and reverse; nor is there cause to think any of them older than about 400 years before our era. From Scripture it also appears that weight alone was used in the famous cities of Tyre and Sidon; nor is there a hint in any ancient writer of coins peculiar to them or at all used by them.

India, though famous for its Brahmins and early civilisation and commerce, appears not to have any claim to early use of coinage. No Indian or Chinese coins exist, till within a late period: and those of both countries are so rude as hardly to deserve collecting.

Upon the whole the Lydian coins seem the most ancient in Asia. The wealth of the Lydian kings is famous in history and poetry: unhappily their coins have no legends, so that conjecture only points out the ancient coins in electrum and silver, found in Asia Minor, and different from the Persian, to be Lydian.

In Dr. Hunter's cabinet there is a gold coin weighing a tetradrachm which is extremely ancient. It has the usual rude globosity of early antiquity, and bears the indented marks of the first coinages on one side, while the other presents a man kneeling with a fish held out in his left hand, Lydia being a maritime country, and a sword depending in his right. It is of very pale gold, like electrum, which is owing to the want of art at first in refining the metal; which, as Pliny tells us, was often found mingled with a great deal of silver. When the silver was above one-fifth of the gold it was denominated native electrum; and, indeed, sometimes more highly valued by the ancients than gold itself. In the same drawer of that cabinet, among the uncertain coins, there are near a score of other gold coins, some of them not much inferior to this in apparent antiquity. Dr. Combe, who published them in his excellent description of Dr. Hunter's coins of cities, thinks the later ones, which are meant for one size of about forty grains, belong to the cities of Asia Minor. The oldest of them may have been struck there when coinage was proceeding from Lydia through Asia Minor towards Greece. The gold is in many extremely pale; and all, even those which bear the indented mark, are of a most exquisite fabric, surpassing all description; and as much superior to that of the best Sicilian coins as the later are to all other coins in the world.

The coins that must rank next in age to those of Lydia and the cities of Asia Minor are unquestionably those of Greece. The Greek coins, if not the most ancient which we have, are at least of superior antiquity to any whose claims can be clearly authenticated. Perhaps some of the Barbaric pieces, and probably some of the Lydian, may have a claim to priority of æra; but as such medals have no legends it is difficult to fix the precise date of their coinage.

The most ancient Greek coins of silver have an indented mark upon one side, and a tortoise upon the other; and those of greatest antiquity have no letters upon them. Those of latter date have ΑΙΠΙ marked upon them, which has been interpreted of Ægium in Achaia; but which is more probably a contraction of Ægina, the mint of which was much celebrated.

The general denomination of the Greek money is the drachma, or eighth part of an ounce; which to this day is retained in the medical weights, the Grecian coins receiving their names from the weights they bore; though in some instances the weights received their appellations from the coins. The silver drachma, according to Mr. Pinkerton, was about 9d. sterling; and he finds fault with those who make the drachma and denarius both equal to one another, the latter being no more than 8d. The didrachm of silver, according to the same calculation, was worth 1s. 6d.; but the tridrachm occurs very rarely: and medallists often give this name to the didrachm of Ægina. The largest of the Grecian coins is the tetradrachm, which on the Æginæan standard is worth 5s.; but in those of the other states only 4s. There are, however, many subdivisions in the silver drachma; the highest being the tetraobolion or coin of four oboli; being in proportion to the

drachma as our groat to 6d., weighing about forty-four grains, and being in value about sixpence. The hemidrachm or triobolion comes next in value, weighing about thirty-three grains, and worth fourpence half-penny. The silver diobolion or third of the drachma weighs about twenty-two grains, and is worth three pence. The obolus of silver weighs about eleven grains, and is worth only three halfpence. There is likewise a hemiobolion in silver, or half the obolus, of five grains and a half, value three farthings; and another called tetraobolion dichalos, or quarter obolus, which is the most minute coin yet met with; and by reason of its extreme smallness, weighing only two grains and a quarter, is now very scarce: but there is one in the cabinet of Dr. Hunter, and some of them are likewise met with at Tarantum. It would appear, however, that there were some still smaller, and of value only three-fourths of a farthing. None of these have been met with; and the smallness of the size renders it improbable that any will ever be met with: as the peasants, who commonly discover coins, would probably either not observe them at all, or, if they did, would neglect them as things of no value.

Many different names have been imposed on the coins belonging to the different states of Greece: thus Κορη, the maiden, was a name often applied to the tetradrachm, and which would seem to apply to those of Athens; Χελωνε, the shell, was the name of another coin from its type. A Sicilian coin was named Δεμαριον, from Gelon's wife. A tetradrachm was named Κραταγους, and had eight εθιας, or hemidrams. The τριτημνον, so called from its country Troizene, had Pallas on one side and a trident on the reverse. The hemiobolion was the Πελαγον of Lacedæmon; and the Κολλυβος is supposed to have been equal to the Roman sestertius or quarter drachma. The cystophori were coins with the mystic chest or hamper of Bacchus upon them, out of which a serpent rises; and are much celebrated in antiquity. The most probable opinion concerning them seems to be, that they are all silver tetradrachms; such as belong to the cities of Apamea and Laodicea in Phrygia; Pergamus in Mysia; Sardis and Tralles in Lydia; and Ephesus.

Another set of coins famous in antiquity were those of Cyzicus in Mysia, which were of gold; but they are now almost entirely vanished, being recoined in other forms. The Αριανδικον νομισμα, or money of Aryandes, who was made governor of Egypt by Cambyses, is mentioned by Hecataeus; but none of them have reached our times. They must have been marked with Persian characters, if with any. The coin of queen Philistis is mentioned by the same writer, and many of these pieces are still extant; but we know not where this queen reigned, nor does there seem to be any method of finding it out. The most particular attention with regard to the names and standard of coins is due to those of Athens; and it is remarkable that most of them which have reached us are of a very late period, with the names of magistrates inscribed upon them. Some of these bear the name of Mithridates; and few are older than the era of that prince; who, it is

well known, took the city of Athens in his war with the Romans. It is still more remarkable, that the fabric of Athenian coins is almost universally very rude: a singular circumstance if we reflect how much the arts flourished there. It can only be accounted for from the excellence of their artists being such as to occasion all the good ones to be called into other countries, and none but the bad left at home. In like manner, the coins struck at Rome in the imperial times are excellent, as being done by the best Greek artists; while those of Greece, famous at that time for producing artists, are during that period commonly of very mean execution.

The copper money of the Greeks is next in antiquity to the silver. It was not used at Athens till the twenty-sixth year of the Peloponnesian war: about A.A.C. 404, and 300 after silver was first coined there. The first copper coins were those of Gelo of Syracuse, about 490 B.C.

The whole brass coins of Athens published by Dr. Combe are reducible to four sizes, which may be the *lepton*, *dilepton*, *tetralepton* or *hemichalcos*, and *chalcos*. The first is not above the size of one of king James I.'s farthing tokens; the last about that of our common farthing. The *lepta* was also called *λεπτα*, as being change for the poor. The *επταβολος*, perhaps so called from the figure of a wolf upon it, was the coin of a particular state, and if of brass must have weighed three *chalci*. The other names of the copper coins of Greece are but little known. Lycurgus ordered iron money to be coined at Sparta; but so perishable is this metal that none of that kind of money has reached our times.

After the conquest of Greece by the Romans most of the coins of that country diminished very much in their value, the gold coinage being totally discontinued; though some of the barbarous kings who used the Greek character were permitted to coin gold, but they used the Roman model; and the standard used by the few cities in Asia who spoke the Greek language in the times of the emperors is entirely unknown. Copper seems to have been the only metal coined at that time by the Greeks themselves; and that upon the Roman standard, then universal through the empire, that there might be no impediment to the circulation of currency. They retained, however, some of their own terms, using them with those of the Romans. The *assarion* or *asarium* of Rome, the name or the diminished as, being sixteen to the *drachma* or *denarius*; the *obolus* was so much diminished in value as to be struck in brass not much larger than the old *chalcus*, and valued at between two and three *assaria*; which was indeed its ancient rate as to the *drachma*. This appears from the copper coins of Chios, which have their names marked upon them. The brass *obolus*, at first equal in size to the Roman *sestertius* or large brass, lessens by degrees to about the size of a silver *drachma*. From the badness of the imperial coinage in Greece also, it appears that brass was very scarce in that country, as well as in all the cities using the Greek characters, being found mostly in the western countries of the Roman empire. The time of this declension in size of the Greek coins is supposed to have been from

Augustus down to Gallienus. The copper *obolus*, however, at first above the size of large brass, was used in Greece about the time of its first subjection to Rome; and, the *lepta* ceasing, the *chalci* came in their room, with the *dichalcus* and the *hemibolion* of brass.

With respect to the gold coins of the Greeks, none of that metal it would seem was coined before the time of Philip of Macedon, as none have reached our times prior to the reign of that monarch.

Notwithstanding, however, this deficiency of gold coin among the Greeks, it is certain that the coinage of gold had taken place in Sicily long before; as we have gold coins of Gelo about 491 B.C., of Hiero I. 478, and of Dionysius I. in 404, all using the Greek characters; though not to be ranked among the gold coins of Greece, as Philip caused his to be.

Gold coins were used in the cities of Brettium, Tarentum, and throughout Magna Græcia: also in Panticapæa in Thrace, and likewise in Cosa in that country; but not in Tuscany, as is commonly believed, though Neumann proves that they were struck by Brutus, and are unquestionably as ancient as the Greek coins. The Thebans and Athenians probably coined the first gold after Philip had set them the example, and when they were attempting to resist the projects of that enterprising monarch. The Ætolians probably coined their gold during the time of their greatest power, about a century after Philip, and when they were combating the power of Aratus and the Achæan league. 'There is,' says Mr. Pinkerton, 'but one *μικρονομος* of Thebes, much worn, in Dr. Hunter's cabinet, and weighing but fifty-nine grains; and perhaps not above two or three *χρυσοι* or gold didrachms of Athens in the world; one of which is also in the collection of Dr. Hunter, and weighs 132½ grains. It appears to be more modern than the reign of Philip. That monarch, having got possession of the mines of Philippi in Thrace, improved them so much that they produced him annually above 1000 talents of gold, or £2,880,000 of our money. From this gold the first coins named from the monarch Philippi were struck. They were marked with his portrait; and for many ages after were so numerous that they were common in the Roman empire; whence the name Philippi became at length common to gold, silver, and at last even brass coins of their size. Even in the time of Philip gold was very scarce in Greece; but, after the Phocians had plundered the temple of Delphos, this precious metal, which had been valued as gems, and consecrated only to the decoration of the temples of the gods, began to be known among the Greeks. The comparative values of gold and silver, however, seem to have been at that time very different from what they are now. Herodotus values gold at thirteen times its weight in silver: Plato in his *Hippiarchus* at twelve; and even the low value of ten to one seems to have been the stated value in Greece, though in Rome the plenty of silver from the Spanish mines made the value of gold to be much higher; and there is no reason to think that it was ever valued in that city at less than twelve times its weight in silver. The Philippus, *χρυσοι*, gold piece, or stater, is a didrachm, and

is the most common of all the ancient coins. There are proofs of the Philippi being didrachms, both from the writings of ancient authors and from numbers of the coins themselves, which remain to this day ; and that the χρυσός, or principal gold coin of Greece, was of the same weight, is also evident from ancient writings. It was anciently worth about fifteen shillings, but, valuing gold now at the medium price of £4 per ounce, it is worth about twenty shillings. The σικυριεύς, or half the former coin, scarcely occurs of the coinage of Philip and Alexander, though it does of Hiero I. of Syracuse, and of king Pyrrhus. It passed for ten silver drachms, and was valued only at seven shillings and sixpence, though now worth ten shillings. There was another division of this kind worth about five shillings. There were besides some less divisions of gold coins, which could not be worth above two drachms. These were coined in Cyrene ; and there were besides several old gold coins of Asia Minor, the value of which is now unknown. Our author supposes that they were coined, not with relation to their weight as parts of the drachma, but merely to make them correspond with so many silver pieces as was necessary. There are also larger coins than the χρυσός, the Δαχρυεύς of Alexander and Lysimachus being double its value. Some others are met with of Lysimachus, Antiochus III., and some of the Egyptian monarchs, weighing four times the χρυσός, and now worth about £4 sterling.

Next are the Persian, which are well known, from the archer on them, and from Mithras, the Persian deity ; the dress of the princes and other marks. None of these coins can be older than 570 years before our era, when the Persian empire began. The famous Darics were issued by Darius Hystaspis, who began to reign 518 years before Christ. The joke of Agesilaus is well known, who being forced to retire from an invasion of Persia, by the bribery used by the great king to instigate the enemies of Sparta, said that 30,000 archers had defeated him. These coins are extremely scarce, being mostly melted down for his own coinage by Alexander the Great, upon his conquest of Persia. One, however, is in lord Pembroke's collection, having an archer upon one side, and the rude indented mark of early coinage on the other.

All the real darics are gold ; the silver coins with the archer are later, and never were called darics. Most of the Persian coins which have reached us are silver ; and have generally a king in a chariot of two horses, with a charioteer, and sometimes another figure on foot behind, on the obverse ; while the reverse presents a ship, the Persians being powerful at sea, as well as by land. Some have Persian characters. One in Dr. Hunter's cabinet has a ram on one side, with a long legend : the reverse has some sacred symbol in a hollow square. This symbol also occurs in the coins of the Sassanide. Another has a lion, another a bull. One has a fine Mithras, the Persian name of the sun, with his usual appearance of a bird's wings springing from his middle, and a bird's tail and feet : the obverse is a king, three quarters length, of fine

work. Some are of copper, very thick, with the king in a car on one side, and the ship on reverse.

But it will be proper to say a few words on the weight and ancient value of the Persian coins. The darics of Persia are celebrated in all antiquity ; and were gold coins, so called from Darius son of Hystaspes, who began to reign 518 years before our era. As the first gold coins of Macedon were called Philippi, from Philip the first king who coined gold ; it may, perhaps, be inferred from analogy, that the first gold coinage in Persia was known under Darius. The size and weight of these darics are subject to doubt. Josephus says they were equal to the tetradrachm in weight, and worth fifty Greek drachmæ. But we have many authors, one of them, Xenophon, particularly respectable, who informs us they were didrachms, and worth twenty Attic silver drachmas.

The darics are described by ancient writers as having the figure of an archer. There is one of these darics in lord Pembroke's cabinet, and weighs 129 grains, which shows them to have been didrachms on the Eubœic or Attic standard. The reader will see from the print of it, plate I, that it has the globosity and indented mark of early coinage ; perhaps longer retained in the east than in Greece. It is likely that the late bishop of Bagdat who resides in their native country, and had, as Mr. Ives tells us in his voyage to the East Indies, a large collection of Persian coins in all metals, may have had some in his possession. There is one piece, but of silver, in Dr. Hunter's cabinet, evidently Persian, which has a king on horseback on one side, and an archer kneeling in act to shoot on the reverse. It weighs 168 grains, and if the Babylonian talent, which seems to have been the standard of the Persian silver, was eighty Attic minæ, this would have been the didrachm of that talent.

But as gold was not the primitive coinage of Greece or Rome, so it is probable that silver preceded it in Persia ; and we have silver coins of Persia which bear every mark of remote antiquity. The most ancient, which are very rude, and have a shapeless hollow on the reverse ; with an archer on the obverse, but with his bow in one hand and arrow in the other, not shooting as in that above described, weigh about eighty-two grains. Others with a king's head on one side, and a ship on reverse, weigh about the first mentioned, or 164 grains ; some weigh fifty-three grains, and others about twenty-six. A fine one with a king three quarters length on one side, and Mithras on reverse, with his usual symbols of a bird's feet and tail, and the wings at his waist, weighs 160½ grains ; but is much worn on the sides, and must at first have reached the first, or 168 grains. There are four or five others, with a king in a chariot, a charioteer and attendant on one side, a ship on the other, of great size, not less than 432 grains, being more than seven Attic drachmas. I refer to those in the vast collection of the late Dr. Hunter, to which indeed I have been indebted for most of my references to coins. The above Persian coins, in particular, add much to the riches of

that wonderful cabinet, as hardly one of them is known to any other collection in Europe.

Of Persian coins there is a second series, that of the Sassanids, beginning about A.D. 210, when Artaxerxes overturned the Parthian monarchy. The Parthian coins have all Greek legends, as before mentioned; but these later Persian bear only Persian characters. They are large and thin; with the king's bust on one side, and the altar of Mithras on the other, generally with a human figure on each side, as the reader will see in the fine specimen, plate I. The Persian letters are the only ones of antiquity which have not been explained, though so many specimens remain. The oldest inscriptions at Persopolis are in those called Scandinavian antiquaries. Palmyrene or Syriac inscriptions also occur there. But the letters on Persian coins are peculiar, and no attempt has yet been made to explain them. They seem to partake of the ancient Greek, Gothic, and Alanic. The later Persian coins extend to the year 636, when Persia was conquered by the Arabian caliphs.

In Rome, as well as in Greece, the money was at first estimated by weight; and the first metal coined by that people was copper, silver being long unknown in Rome; nor is it certainly known that any silver has ever been found in the Italian mines. In Rome the first valuation of money was by the *libra gravis æris*, or pound of heavy brass; and, in the progress of their conquests, the little silver and gold that came in their way was regulated by the same standard, as appears from the story of Brennus. The weights made use of were the same with those which continue to this day. The pound consisted of twelve ounces of 458 grains each; but the pound by which the money was weighed appears to have consisted only of 420 grains to the ounce, or to have contained in all 5040 grains. This became the standard of copper; and, when silver came to be coined, seven denarii went to the ounce as eight drachms did in Greece. Gold was regulated by the *scriptulum* or *scrupulum*, the third part of a denarius, and by the larger weights just mentioned. The number 10 was at first used by the Romans in counting their money; but, finding afterwards that a smaller number was more convenient, they divided it into quarters; and, as the quarter of ten is two and a half, they for this reason bestowed upon it the name of *sestertius* or 'half the third;' to express that it was two of any weights, measures, &c., and half a third; whence the *sestertius* came at last to be the grand estimate of Roman money. The *as* being at first the largest, and indeed the only Roman coin, the word *sestertius* means *sestertius as*, or 'two asses and a half.' On the first coining of silver, the *denarius* of ten asses was struck in the most common and convenient denary division of money, or that by tens; the *sestertius* being of course two asses and a half. But, the *denarius* being afterwards estimated at sixteen asses, the name *sestertius* was still applied to a quarter of the *denarius*, though it now contained four asses. The term *sestertius* was applied to all sums not exceeding 1000 *sestertii*, or £8 6s. 8d.; but for greater sums the mode of the *sestertius* was likewise altered, though not to exclude the former.

Very large sums of money were estimated by the hundred weight of brass; for the Romans were at first unacquainted with the talent. The hundred weight, by way of eminence, was distinguished by the name of *pondus*, and *sestertium pondus* became a phrase for 2½ cwt. We may value the *as libralis* of ancient Rome at about eight-pence English. Estimating the *as* therefore at a pound weight, the *sestertium pondus* was equal to 1000 *sestertii*, or £8 6s. 8d. and, by a coincidence which our author supposes to have been the effect of design, as soon as the silver coinage appeared, the *sestertium centum denariorum* was always equal to *sestertium* £8 6s. 8d. also. The word itself, however, seems to have been unknown prior to the coinage of silver money at Rome: the *pondera gravis æris* being sufficient before that time for all the purposes of a state in which money was so scarce. But, however this may be, the *pondus* or hundred weight of brass was precisely worth 100 *denarii*, or a pound of silver. As the great *sestertium* was always valued at 1000 of the smaller, or £8 6s. 8d., we never find one *sestertium* mentioned in authors, but two, three, or more; 10,000 of them being equal to £8,333,333 6s. 8d.

Some coins are found which exceed the *as libralis* in weight; and these are supposed to be prior to the time of *Servius Tullius*. Some of them are met with of thirty-four and of fifty-three Roman ounces; having upon one side the figure of a bull rudely impressed, and upon the other the bones of a fish. They are most commonly found at Tuder, or Tuderum in Umbria; but they appear always broken at one end; so that perhaps some might be struck of the *decussis* form, or weighing ten pounds. These pieces make it evident that the Romans derived their large brass coins from the Etruscans and the neighbouring states: they are all cast in moulds; and the greater part of them appear much more ancient than the Roman asses, even such as are of the greatest antiquity.

Mr. Pinkerton agrees with Sir Isaac Newton as to the time that *Servius Tullius* reigned in Rome, which he supposes to be about 460 B.C. His coinage seems to have been confined to the *as*, or piece of brass having the impression of *Janus* on the one side and the prow of a ship on the other, because *Janus* arrived in Italy by sea. *Varro*, however, informs us that the very first coins of *Tullius* had the figure of a bull or other cattle upon them, like the Etruscan coins, of which they were imitations. Those with the figure of *Janus* and the prow of a ship upon them may be supposed first to have appeared about 400 B.C.; but, in a short time, various subdivisions of the *as* were coined. The *semis* or half is commonly stamped with the head of *Jupiter laureatus*; the *triens* or third, having four cyphers, as being originally of four ounces' weight, has the head of *Minerva*; the *quadrans* or quarter, marked with three cyphers, has the head of *Hercules* wrapt in the lion's skin; the *sextans* or sixth, having only two cyphers, is marked with the head of *Mercury* with a cap and wings; while the *uncia*, having only one cypher, is marked with the head of *Rome*. All these coins appear to have been cast in moulds, by a con-

siderable number at a time; and in the British Museum there are four of them all united together as taken out of the mould in which perhaps dozens were cast together. In process of time, however, the smaller divisions were struck instead of being cast; but the larger still continued to be cast until the as fell to two ounces. Even after this time it was still called *libra*, and accounted a pound of copper: though there were now larger denominations of it coined, such as the *bissas* or double as: *tressis* and *quadrussis* of three and four asses; nay as far as *decussis* or ten asses, marked X. Olivieri mentions one in his own cabinet weighing upwards of twenty-five ounces, and cast when the as was about three ounces' weight. There is likewise in the *Musæum Etruscum* a *decussis* of forty Roman ounces, cast when the as was at four ounces. There was likewise a curious *decussis* in the Jesuits' library at Rome, for which an English medallist offered £20; but it was seized by the pope along with every other thing belonging to the society.

The as decreased in weight at the following periods. About the year 300 B. C. it weighed ten ounces—eight ounces about 290—six ounces about 280—four ounces about 270—three ounces about 260—two, according to Pliny, about 250—one according to the same author, about 214—and about 175 he says that the as was reduced to half an ounce by the Papyrian law, at which it continued till the time of Pliny himself, and long after.

After the Romans began to have an intercourse with Greece a variety of elegant figures appear upon the parts of the as, though not on the as itself till after the time of Sylla. Towards the latter end of the republic also, *dupondii*, or double asses, were coined, together with the *sestertii ærei*, which came in place of the *quadrusses*, when the *denarius* began to be reckoned at sixteen asses; probably at the time the latter was reduced to half an ounce. In some instances it is to be observed that the Romans accommodated their coins to the country where their army was stationed; whence we have many coins marked as Roman, which have been coined in *Magna Græcia* and *Sicily*, and are evidently upon the Greek and not the Roman scale. In the latter part of the republican times, also, the types begin to vary; so that we have a brass coin supposed to be struck by *Sextus Pompeius* in *Sicily*, having upon it a double head of that warrior, representing a *Janus*. This coin is of copper, and still weighs an ounce, notwithstanding its antiquity.

The largest imperial copper coin was the *sestertius*, a piece worth about two-pence of our money.

No change took place in the Roman coinage from the time that the as fell to half an ounce to the days of Pliny: but before the time of Julius Cæsar yellow brass began to be used, and was always looked upon to be double the value of Cyprian or red copper. There are but few coins in large brass immediately before Julius Cæsar, or even belonging to that emperor; but from the time of Augustus downward, the large coins are all found of brass, and not one of them copper. The largest of what are called the middle size are all

of yellow brass; and the next size, which is the as, and weighs half an ounce, is universally copper. What the ancients named *orichalcum*, or what we call brass, was always looked upon to be greatly superior in value to the *æscyprium*. *Procopius* tells us that brass inferior in color to gold is almost equal in value to silver. The mines of native brass were very few in number, and were owing entirely to the singular combination of copper and *lapis calaminaris* in the bowels of the earth, which very seldom occurs; and the ancients were far from being well acquainted with the method of combining these two bodies artificially; so that yellow brass was always esteemed at double the value of copper: and hence, in the ancient coinages, the brass and copper pieces were kept as distinct as those of gold and silver.

The *sestertius* underwent no change till the time of Alexander Severus, when it was diminished by one-third of its weight. *Trajanus Decius* was the first who coined double *sestertii*, or *quinarii*, of brass: but from the time of *Trebonianus Gallus* to that of *Gallienus*, when the first brass ceases, the *sestertius* does not weigh above the third part of an ounce; the larger coins are accounted double *sestertii*; and after the time of *Gallienus* it totally vanishes. In the time of *Valerian* and *Gallienus* we find a new kind of coinage, mentioned by the name of *denarii æris*, or *Philippi ærei*. Two sizes of *denarii* began to be used in the time of *Caracalla*, the larger of six *sestertii*, or twenty-four *assaria*; the smaller of four *sestertii*, or sixteen *assaria*, as usual. In the time of *Pupienus* the latter was reduced to such a small size as not to weigh more than thirty-six grains; though in *Caracalla's* time it weighed fifty-six. After the time of *Gordian III.* the smaller coin fell into disuse, as breeding confusion. The larger *denarius* of six *sestertii*, though diminished at last to the size of the early *denarius*, still retained its value of six *sestertii*, or twenty-four *assaria*. The *Philippus æreus* came at length in place of the *sestertius*. It was also called *denarius*; from which we may learn, not only their size, but that they were in value ten *assaria*, as the first *denarius*. In the reign of *Dioclesian*, the place of the *sestertius* was supplied by the *follis*, that emperor having restored the silver coin to its purity, and likewise given this form to the copper; but it would seem that this restoration of the coinage only took place towards the end of his reign; whence we have but few of his silver coins, and still fewer of the *follis*, though the *denarii ærei* continue quite common down to the time of *Constantine*. The *follis* of *Dioclesian* seems to have weighed above half an ounce; and that *Dioclesian* designed this coin to supply the place of the *denarius æreus*; which of course was worth ten *assaria*, and six of them went to the silver *denarius*. From this time the *assarium* diminishes to the size of thirty grains; and soon after the *follis* appeared the *denarius æreus* was entirely dropped, the former having gradually supplied its place. Some mints appear to have retained the use of the *denarius* longer than others; and in some the change was preceded, and gradually brought in, by washing the *follis* with silver or

tin as the denarius had formerly been. Pieces of this kind occur in the times of Dioclesian, Maximian I. and II., and Constantius I.; that is, for about ten years after the follis made its appearance. Some countries, however, retained the denarius æreus; others the follis; and some had a medium betwixt the two, or the follis washed in imitation of the denarius.

Towards the end of the reign of Constantine I. a new coinage was introduced throughout the whole empire. The follis coined by this prince was of half an ounce weight; twenty-four of them going to the milliarenis, or larger silver coin. The word follis signifies also a purse, in which sense we sometimes find it mentioned in the Byzantine history. The common follis of silver, when it occurs by itself, means a purse of 250 milliarenis, as the sestertium was 250 denarii; and, by a law of Constantine I., every man paid to the state a follis or purse according to his income. The method of counting by purses continues in Turkey to this day.

The dupondius was only half the value of the sestertius, or about one penny sterling; and before the yellow brass appeared it seems to have been struck upon copper, and double the size of the as. There are some of this coin, struck in the time of Julius Cæsar in yellow brass, weighing half an ounce; with a head of Venus Victrix upon one side; on the reverse a female figure, with serpents at her feet; while others have a Victory on the reverse, with *Q. Oppius Pr.* After the time of Augustus the dupondius was struck in yellow brass; which Pliny tells us was also the case in his time. The word dupondiaris seems to have been used by Pliny, and adopted, not to express that the coin was dupondius, but that it was of dupondiar value. Neither was the former word confined to signify double weight, but was used also for double length or measure, as in the instance of dupondius pes, or two feet, &c. In the imperial times, therefore, dupondius was used, not to signify a coin of double the weight of the as, but of double the value. It was one of the most common of the Roman coins; and seems to have been very common even in Constantinople. The dupondius, though of the same size with the as, is commonly of finer workmanship, the metal being greatly superior in value. It continued to be of yellow brass, as well as the sestertius, to the time of Gallienus; but the as is always of copper.

The imperial as, or assarium, was worth only a halfpenny. At first it weighed half an ounce, and was always of copper till the time of Gallienus, when it was made of brass, and weighed only the eighth part of an ounce. From the time of Gallienus to that of Dioclesian it continued to diminish still more, the size being then twenty to an ounce. This was the same with the lepta, or smallest coins but the *novæ*, which weighed only ten grains.

The parts of the as occur but seldom; which may indeed be well expected considering the low value of it; though there still occur some of those called semis, triens, quadrans, sextans, and uncia, coined in the times of Nero and Domitian. There is no small brass from the time of Perti-

max to that of Gallienus, excepting that of Trajanus Decius; but in the time of Gallienus it becomes extremely common; and the coins of small brass, as well as the larger, are always marked S. C. (such as want it universally being accounted forgeries), and were plated with silver, though the plating be now worn off. The small pieces struck for slaves during the time of Saturnalia must also be distinguished from the parts of the as. The S. C. upon these most probably signifies Saturni Consulta, and were struck in ridicule of the true coins, as the slaves on that occasion had every privilege of irony.

The sestertius diminishes from Pertinax to Gallienus so fast that no parts of the as are struck, itself being so small. Trajanus Decius, indeed, coined some small pieces, which went for the semis of the time. The small brass coins under Gallienus were called assaria, sixty of which went to the silver denarius. They are about the size of the denarius, and some of them occur, of the coinage of Gallus and his family, of half that size, which appear to have been struck during the latter part of his reign, when the assarium was diminished to a still smaller size. It is probable, however, that some of these very small coins had been struck in all ages of the empire, in order to scatter among the people on solemn occasions.

The assarion or lepton of the Constantinopolitan empire was one of the smallest coins known in antiquity, weighing no more than twenty grains; and the noumia were the very smallest which have reached our times, being only one-half of the former. By reason of their extreme smallness they are very scarce; but Mr. Pinkerton had a fine one of Theodosius II. which has on it the emperor's head in profile, Theodosius P. F. AV.; on the reverse a wreath, having in the centre *VOT. XX. MUL. XXX.*

The principal coin of the lower empire was the follis, which was divided into a half and a quarter, named *μυροπολεος* and *τετραπρον*; the latter of which is shown by Du Cange to have been a small brass coin. Besides these the follis was divided into eight oboli, sixteen assaria or lepta, and thirty-two noumia, though in common computation it contained forty of these last. This coin, notwithstanding so many divisions, was of no more value than a halfpenny.

There are pieces of Justinian which weigh a whole ounce; but the size of copper was increased as the silver became scarcer; and the value of the coinage cannot be deduced from the weight of the coins, as it is plain that our own coinage is not of half the value with regard to the metal. A great number of medallions were struck by Constantius II., but there is no other copper larger than the half ounce, excepting that of Anastasius, when the follis began to be struck larger. All medallists allow the others to be medallions.

The metal employed in these very small coins, though at first of brass, was always a base and refuse kind; but copper is generally made use of in the parts of the as from the earliest times to the latest; and if brass be sometimes employed it is never such as appears in the sestertii and dupondiarri, which is very fine and beautiful,

but only the refuse. Yellow brass of the right sort seems totally to have ceased in the Roman coinage with the *sestertius*, under Gallienus, though a few small coins of very bad metal appear under that hue as late as Julian II.

Silver began to be coined in Rome so late as A. U. C. 485, or A. A. C. 266.

The first silver *denarii* coined at Rome are supposed to have been those which are impressed with the *ROMA*. There are fifteen of these in the cabinet of Dr. Hunter; one of the largest weighs ninety-eight grains and a quarter; and the rest, which seem to be of greatest antiquity, are of various weights betwixt that and eighty-four; the smaller and more modern weigh fifty-eight or fifty-nine grains; but the large ones are of the very first Roman coinage, and struck during that interval of time betwixt the coinage of the first silver *denarius* and the *as* of two ounces. The indentation of the word *ROMA* is a mark of great antiquity; such a mode being scarcely known any where else, except in Caulonia, Crotona, and other towns of Italy; all of them allowed to be struck at least 400 B. C. As these large coins are not double *denarii* they must have been struck prior to the small ones; and Newmann has given an account of one of them recoined by Trajan, in which the indentation of *ROMA* is carefully preserved. The first *denarius* was in value ten asses, when the *as* weighed three ounces; and, allowing ninety grains at a medium for one of these large *denarii*, the proportion of copper to silver must have been as one to 160; but when the *as* fell to one ounce the proportion was as one to eighty; when it fell to half an ounce, so that sixteen asses went to the *denarius*, the proportion was as one to sixty-four, at which it remained. Copper with us, in coinage, is to silver as one to forty; but in actual value as one to seventy-two.

At Rome the *denarius* was worth eight pence; the *quinarius* four pence; and the *sestertius*, whether silver or gold, two pence. The *denarius* is the coin from which our penny is derived, and was the chief silver coin in Rome for 600 years. According to Celsus, seven *denarii* went to the Roman ounce, which in metals did not exceed 430 grains; but, as all the *denarii* hitherto met with weigh at a medium only sixty grains, this would seem to make the Roman ounce only 420 grains; though perhaps this deficiency may be accounted for from the unavoidable waste of metal even in the best preserved of these coins. According to this proportion, the Roman pound contained eighty-four *denarii*; but in tale there was a very considerable excess; for no fewer than 100 *denarii* went to the Roman pound. The Greek ounce appears to have been considerably larger than that of Rome, containing about 528 grains; yet, notwithstanding this apparently great odds, the difference in the coins was so small, that the Greek money went current in Rome, and the Roman in Greece. The *denarius* at first went for ten asses, and was marked X; it was afterwards raised to sixteen; which Mr. Pinkerton supposes to have been about 175 B. C. Some are met with bearing the number XVI; nay, with every number up to CCCCLXXVI. These large numbers are

supposed to have been mint-marks of some kind or other. After being raised to sixteen asses, it continued at the same value till the time of Gallienus; so that, till that time, we are to look upon its constituent parts to be sixteen asses or *assaria*, eight *dupondii*, four brass *sestertii*, and two silver *quinarii*. Under the emperor Severus, however, or his successor Caracalla, *denarii* were struck of two sizes, one of them a third heavier than the common; which we must of consequence suppose to have borne a third more value. This large piece obtained the name of *argenteus*, and *argenteus Philippus*, or the 'silver Philip;' the name of Philip having become common to almost every coin. The common *denarii* now began to be termed *minuti* and *argentei Philippi minuti*, &c., to express their being smaller than the rest. Some have imagined that the large *denarii* were of the same value with the small, only of worse metal. The first mention of the *minuti* is in the time of Alexander Severus, who reduced the price of pork from eight *minuti* at Rome to two and to one. The *minutus argenteus* of that age was about forty grains; and, from the badness of the metal, was not worth above four pence of our money.

According to Zozimus, and other writers, the purity of the Roman coin was restored by Aurelian; and his successor Tacitus is said to have allowed no brass to be mixed with the silver on any account; yet the few coins of this emperor are very much alloyed. We are certain, however, that the emperor Dioclesian restored the silver to its ancient purity; the *denarii* struck in his reign being very small indeed, but of as fine silver as the most ancient coins of the empire. After Gordian III. the small *denarius* entirely vanished, while the large one was so much diminished that it resembled the *minutus*, or small one of Caracalla, in size. Gallienus introduced the *denarii aerei* instead of the *sestertii*. The *argenteus*, though reduced more than one-third in size, contained six *denarii aerei*, the old standard of the *sestertii*. According to the writers of this period, and some time afterwards, the *denarius argenteus* contained sixty *assaria*; whence it follows that each *denarius aereus* had ten; and from this it probably had its name. The *assaria* are of the size of the *argentei* already mentioned; and show the copper to have retained nearly its old proportion of value to the silver, viz. one to sixty.

A larger silver coin was introduced by Constantine I., who accommodated the new money to the pound of gold in such a manner that 1000 of the former in tale were equal to the latter in value; so that this new piece from thence obtained the name of the *milliarius*. Its weight, at a medium, is seventy grains, or seventy to the pound of silver. The code says that sixty went to the pound; but the numbers of this are quite corrupt. The *milliarius* was worth about a shilling sterling. The *argentei denarii*, however, were still the most common currency; and, having been originally rated at the 100 to the pound of silver in tale, they from hence began to be called *centenionales*, or 'hundreders.' Those of Constantine I. and II., *Constantians* and *Constantius*, weigh from fifty

grains down to forty; those of Julian and Jovian, from forty to thirty; and of the succeeding emperors, from that time to Justinian, from thirty to twenty. Under Heraclius they ceased entirely; and, from Justinian to their total abolition, had been brought down from fifteen to ten grains. A like decrease of weight took place in the milliarensis; those of Constantine and Constans being above seventy grains in weight; those of Arcadius not above sixty; and the milliarensis of Justinian not more than thirty grains. These coins were also called majorine.

The smaller silver coins of Rome were, 1. The quinarius, at first called victoriatu, from the image of Victory on its reverse; and which it continued to bear from first to last. Its original value was five asses, but it was afterwards raised to eight, when the value of the denarius increased to sixteen. According to Pliny, it was first coined in consequence of the lex Clodia, about the 525th year of Rome. Some are of opinion that it was called *separat* under the Constantinopolitan empire, because it was worth a *separat* of gold, 144 of which went to the ounce; but this is denied by Pinkerton, because, at the time that the word *separat* first appears in history, the denarius did not weigh above thirty grains: and of consequence, as twenty-five must have gone to the gold solidus, of which there were six in the ounce, 150 denarii must have gone to the ounce of gold. He is therefore of opinion that the word *separat* was only another name for the denarius when much reduced in size; probably owing to the great scarcity of silver in Constantinople, though in the same city there was plenty of gold; and of consequence the gold solidus was never diminished. The quinarius diminishes in size along with the other coins; those of Augustus weighing thirty grains, of Severus twenty-five, of Constantine I. twenty, of Justinian twelve, and of Heraclius only five. A new silver coinage seems to have taken place after the days of this emperor; as the little we then meet with, which in the best cabinets scarce exceeds a dozen of coins, consists entirely of large unshapely pieces of coarse metal.

2. The consular denarius had also four silver sestertii, till the as fell to half an ounce, when it was thought proper to coin the sestertius in brass, as it continued to be ever afterwards. 'The very last silver sestertius which appears is one with a head of Mercury, and H. S.; on the reverse a caduceus P. SEPTILLIVS; who appears to be the P. SEPTILLIVS MACER of the denarii of Julius Cæsar. If so, as is most probable, the sestertius was coined in silver down to Augustus; and it is of course not to be expected that any of the brass can appear till Augustus, under whom they are actually quite common. Not one silver sestertius appears during the whole imperial period; yet we know that the sestertius was the most common of all silver coins. The consular sestertii of silver, marked H. S., are not uncommon, nor the quinarii; but the latter are very scarce of all the emperors, if we except one instance, the ASIA RECEPTA of Augustus.

The Roman gold coinage was still later than that of silver. Pliny tells us, that 'gold was coined sixty-two years after silver; and the

scruple went for sixty sesterces. It was afterwards thought proper to coin forty pieces out of the pound of gold. And our princes have by degrees diminished their weight to forty-five in the pound.' This account is confirmed by the pieces which still remain; for we have that very coin weighing a scruple, which went for twenty sesterces. On one side is the head of Mars, and on the other an eagle; and it is marked XX . We have another coin of the same kind, but double, marked XXX ; and its triple XXX , or sixty; the V being the old numeral character for fifty.

The aurei, or Roman gold coins, were at first forty-eight in the pound; but they were afterwards diminished in number to forty, owing to an augmentation in the weight of each coin. In the time of Sylla, the aureus weighed no less than from 164 to 168 grains, and there were only thirty in the pound; but such confusion in the coinage was introduced by that conqueror, that no person could know exactly what it was worth. Till this time the aureus seems to have continued of the value of thirty silver denarii, about one pound sterling; for about that time it was enlarged a whole third, that it might still be equivalent to the full number of denarii. But after Sylla had taken Athens, and the arts and manners of Greece became objects of imitation to the Romans, the aureus fell to forty in the pound, probably when Sylla had abdicated his dictatorship. Thus, being reduced near to the scale of the Greek χρυσος, it passed for twenty denarii, as the latter did for as many drachmas, being in currency thirteen shillings and four pence sterling. We know from Suetonius that Cæsar brought from Gaul so much gold that it sold for nine times its weight of silver; but the Gallic gold was of a very base sort.

In the time of Claudius, the aureus was valued at 100 sesterii, or twenty-five silver denarii, at which it continued till the time of Heliogabalus, when it fell to about ninety-two grains at a medium, or rose in number to fifty-five in the pound. In the reign of Philip, during which the city completed its 1000th year, the aureus was coined of two or three sizes. These are impressed with a head of Rome on one side, and various figures on the other; but the workmanship is so rude that they are supposed to have been struck in some of the more uncivilised provinces of the empire. The practice of having different gold coins, however, continued under Valerian, Gallienus, and his successors. In the time of Gallienus, they were of thirty, sixty-five, and from eighty-six to ninety-three grains; the double aurei being from 172 to 183½ grains; but the aureus, properly so called, was from eighty-six to ninety-three; those of thirty and thirty-two being the trientes aurei of the Historiæ Augustæ Scriptores; while the larger, from sixty-two to sixty-five, are to be accounted double trientes, and were perhaps called minuti aurei. The value of these different sizes of aurei is not known.

That Aurelian made some alteration in the coin is certain; but Pinkerton supposes it to have been only in the gold; because, under him and his successor Probus, the common aureus was of 100 grains; a size confined to those emperors; there are likewise halves of about fifty grains; and double aurei, commonly of very

fine workmanship, of upwards of 200 grains. In the time of Gallienus, the precious metal was so common that this emperor vied in magnificence with Nero and Heliogabalus. Aurelian, who plundered the rich city of Palmyra, and thus became master of the treasures of the east, obtained such a profusion of gold that he looked upon it to be produced by nature in greater plenty than silver.

In his reign a terrible rebellion took place among the money coiners, which is generally ascribed to his having ordered the gold to be restored to its former size, but to pass for no more silver than it had formerly done. So very little silver occurs of this period (and indeed we learn from history that but little was struck) that it is evident no alteration in that coinage could occasion disturbance; and in the brass no change was attempted. But when he ordered the aureus, which had fallen to eighty grains, to be raised to about 100, it is not surprising that the contractors should make an uproar; for a whole quarter of their coinage amounting, as would seem, to about the whole of their profit, was lost to them. Aurelian judged that, when he found gold so common in the east, it was equally so in the west, and that therefore the moneyers in that part of his empire were making most exorbitant profits. Such, however, does not appear to have been the case; and after his short reign, which did not continue above five months after the alteration, the gold returned to its former course, although a few pieces occur of Aurelian standard, struck, as would seem, in the commencement of the reign of Probus his successor.

From this time to that of Constantine I. the aureus weighed between seventy and eighty grains; but in his reign it was changed for the solidus, of which six went to the ounce of gold, which went for fourteen milliarense and twenty-five denarii as before, the value of silver being now to that of gold as fourteen to one. This new coin continued of the same value until the final downfall of the western empire, gold being always very plentiful in Constantinople, though silver became gradually more and more scarce. The solidus was worth twelve shillings sterling. The gold coins called Bezants in Europe, because sent from Byzantium, were solidi of the old scale, six to the ounce. In Byzantine writers the solidi are named from the princes whose portraits they bear, as Michaelate Manuclati. Solidus is a term used also for the aureus, even in the prætorian edicts of Trajan, and by Apuleius, who lived in the time of Antoninus; but in the time of Valerian, when aurei of different sizes had been introduced, it became necessary to distinguish what particular kind of aurei were meant. Hence, in the Imperial Rescripts published by the Historiæ Augustæ Scriptores, Valerian uses the terms aurei Philippi and Philipeos nostri vultus for the common aurei. Gallienus uses aurei Valeriani for his father's coins; aurei Antoniani are likewise put by Valerian for coins of the early Antonini, which were of superior standard to any then used.

In the first gold coinage of Rome the aureus was divided into four parts, the semissis of sixty sesterii; the tremissis of forty; the fourth, the name of which is never mentioned, of thirty;

and the scrupulum of twenty. But in a short time these fell into disuse, except the semissis, or half, which also is extremely scarce. It appears to be an erroneous opinion that the semissis was sometimes called a denarius aureus. Indeed the aureus itself had this name; and the name of quinarius would be applied to the semissis with greater propriety than the former. Trientes of gold are found of Valerian and his son Gallienus, and weigh about thirty grains, while those of Salonia, the wife of Gallienus, weigh thirty-three grains. Under the western empire trientes again made their appearance; and from the time of Valentinian downwards are the most common gold coins, these being worth about four shillings sterling. The semissis is likewise mentioned, but none occur earlier than the time of Basiliscus. The gold tremissis was the pattern of the French and Spanish gold coins; as the silver denarius, in its diminished state, was of the Gothic and Saxon penny.

The deities and personifications in Roman coins have so generally their names in the legend, that it is not necessary to give any lengthened description or explanation of them; some few may however be noticed. When an ensign stands alone on the reverse of a Roman colonial coin, without any persons, it shows a colony drawn from one legion; but when more than one ensign appears, it evinces the colony to have been drawn from as many legions as there are ensigns. A bull on these coins often represents Apis as a symbol of strength and security: such was probably the bull upon the reverse of the common coin of India, *VICTA*, with two stars over him, and the legend *SECURITAS REIPUB*. The caduceus marks peace and concord; the cornucopia abundance; the pontifical hat the priesthood. They all appear upon a reverse of Julius Cæsar, and are symbols of the concord of the empire, and the plenty which attended his power; the last symbol denoting that he was Pontifex Maximus. The 'parazonium' on Roman coins was a baton of command, and not a pointless dagger, as it has been described by many antiquaries. In later times the globe on an altar, with three stars, is supposed to typify the world preserved by the gods for the three sons of Constantine I. The fort and the gate are symbols of security. The altar is a well known mark of piety: the tripod was a portable altar, used in temples for liquid offerings, as the altar was for solid sacrifice.

The palm-tree, on both Greek and Roman coins, is symbolic of Phœnicia, where that tree flourished; as the silphium is of Cyrene, from the earliest times down to those of the western empire.

Titles are generally found upon the face of the medal. These are titles of honor, as Emperor, Cæsar, Augustus, given to all the Roman emperors after Octavianus; Dominus, first assumed by Aurelian: other titles given to particular persons on account of their virtues, as Pius to Antoninus, and with the addition of Felix to Commodus. Pater Patriæ, first bestowed on Cicero, on his discovering and defeating the conspiracy of Catiline, and afterwards assumed by the emperors; Justus, the title of Pescennius; Beatissimus and Felicissimus, of Diocle-

stan; Optimus et Clemens, decreed to Trajan by the senate; Maximus, assumed by Constantine; and Invictus by Victorinus. In the lower empire, Stauracius first, and then Michael Ducas, and others, assumed the proud addition of ΒΑΣΙΛΕΥΣ, or king; which was followed by that of ΔΕΣΠΟΤΗΣ, or despot. Other titles are the names of offices, as cos. for consul, with a number annexed to it, signifying how many times the person had been thus elected: Tribunitia potestas, with the year of the tribuneship commonly expressed after the title, as TRIB. POT. X. or XVI., &c. The office of pontifex maximus, expressed by P. M., was assumed by the emperors, and generally expressed among their titles, from Augustus to Constantine, by whom it was refused: it was re-assumed by Julian, and laid aside by Gratian. Julius assumed the title of dictator perpetuus; Claudius that of censor; and Domitian made himself censor perpetuus.

The large early copper coins only bear ROMA in the reverse. Afterwards we find the names and titles of the quæstor or director of the public treasury, the triumviri monetæ, who directed the mint; the prætor, the curule ædile, the ædile of the people; the præfect of the city, augur, flamen martialis and quirinalis; and latterly, triumvir reipublicæ constituendæ, and ad frumentum emundum. Of the great magistrates out of Rome, who had moneyers with them, in order, from bullion and the spoil of the enemies, to coin money for paying the troops engaged in foreign service, we have the names and titles of imperator, proconsul, proprætor, legatus, legatus pro prætore, quæstor, proquæstor, legatus classis, triumvir colonie deducendæ, or reficiendis sacris ædibus. All these titles appear on the reverses of what are called consular coins; while the obverse bears the head of a deity, generally without a legend. In time the magistrates put the head of some illustrious ancestor on the coins, with his name, as Numa, Ancus Martius, Quirinus, or Romulus; Brutus, Ahala, and the like. This led the way to Cæsar, who first put his own head on his coins, when made perpetual dictator; with the legend of names and titles on the obverse, and not on the reverse as before. The inscription VOT. V. MVLTI. X. VOT. X. MVLTI. XX. occurs on many reverses of Roman medals, and most commonly marked on a shield, or within a crown of laurel. This Du Cange interprets to refer to the artifice of Augustus, who pretended to lay down his power, and resume it for ten years longer as at the request of the senate. This term, he says, was by succeeding emperors shortened to five; and solemn vows were entered into by their subjects for their safety to the end of that period; nay, that the double of that period might be allotted to their reign, again to be prolonged, on the wishes of their people, to a future date. This inscription is also found upon coins of Crispus, and other heirs of the empire; and it hence appears that the honor of such solemnities was also conferred on them, when created Cæsars. The 'vota decennalia,' as on coins of Pertinax and of Papianus, were only vows to perform the decennalia, if the emperor should reign ten

years; while 'primi decennales,' or 'secundi decennales,' imply these games to have been actually performed, and the emperor to have reigned ten or twenty years. On coins of Lucilla, Hadrian, Severus, Caracalla, and others, we find VOTA PVBLICA, with a sacrifice; showing that the vows were undertaken with that rite, as they were afterwards performed with solemn games and rejoicings. Coins of Constantine II. and of Constans often bear sic. x. sic. xx., to express the wishes of the people, that, as the emperors had happily reigned ten years, so they might reign twenty.

The following is a table which will greatly assist the student in deciding the country and æra of coins:—

I. ANCIENT GREEK COINS.—1. With one or more hollow indented marks on one side, and an impression in relief on the other, are those of Calcedon on the Hellespont, Lesbos, Abdera in Thrace, Acauchus in Macedon, and Ævina, or Ægium, in Achaia. This class continues from about 900 to 700 B. C. 2. With an indented square divided into segments, having a small figure in one of them; the rest blank, with a figure in relief on the obverse, are those of Syracuse, and other places adjacent. Continue from 700 to 600 B. C. 3. Coins hollow on the reverse, with figures in relief on the obverse, belong to Caulonia, Crotona, Metapontum, &c.; supposed by some to be a local coinage of Magna Græcia; but probably of equal antiquity with the former. 4. Coins in which a square die is used on one or both sides are those of Athens, Cyrene, Argos, &c.—Of Alexander I. and Archelaus I. of Macedon. Disused in the reign of the latter, about A. A. C. 420. 5. Complete coins, both in obverse and reverse, occur first in Sicily in the time of Gelo, about A. A. C. 491. 6. Coins of Alexander the Great and his successors. About the time of this hero the Greek coins began to attain perfection and beauty. It is remarkable that on the coins of this monarch his own portrait seldom occurs. After his death many coins bear his portrait. Trebellius Pollio informs us that some coins, particularly those of Alexander, used to be worn as amulets; and many of his medals are met with in cabinets bored seemingly with that intention. 7. Coins of the successors of Alexander.—Those of the Syrian monarchs almost equal the coins of Alexander himself in beauty. Those of Antiochus VI. are supposed to be the most perfect patterns of manly beauty any where to be met with. The Egyptian Ptolemies are somewhat inferior. 8. The coins of the Arsacids of Parthia, executed by Grecian artists, are worth notice. 9. The Greek imperial coins being such as have the head of an emperor or empress; such as have not these impressions being classed with the civic coins, though struck under the Roman power. None of the imperial coins occur in gold. Of silver there are those of Antioch, Tyre, Sidon, Tarsus, Berytus, Cæsarea. Egyptian silver coins of base metal. Syrian silver coins, which sometimes bear on the reverse the club of Hercules, or the Tyrian shell-fish. Those of Sidon bear the image of the goddess Astarte, or her chariot. Those of Cæsarea in

Cappadocia, are better work than the Syrian. Lycian coins of good workmanship: on the reverse two harps, and an owl sitting upon them. Silver coins of Gelon in Sarmatia, resembling the Syrian. The situation of this town is very much unknown. It seems to have been situated on the north of the Euxine Sea, where some Sarmatic or Sclavonic tribes were mingled with the Scythians or Goths. The Greek imperial brass coins are very numerous. A series of almost all the emperors may be had from those of Antioch, with a Latin legend on the obverse, and Greek on the reverse. Those of Bithynia and Phrygia are remarkable for good workmanship. The coins of Tarsus, remarkable for their curious views of objects, are almost in perspective. The Egyptian coins, from Augustus to Nero, are worse executed than afterwards. From Nero to Commodus they are often of admirable workmanship, and in a peculiar style, distinct both from the Greek and Roman. From the time of Commodus the Egyptian brass coins of the Roman period are likewise of excellent workmanship, especially in the time of Antoninus Pius.

II. ANCIENT ROMAN COINS.—1. *The consular coins*, called also the coins of families, and arranged alphabetically in cabinets, according to the names of the families which appear on them. They are,

Brass Coins.—These consist chiefly of large pieces, of rude workmanship, without any interesting imagery. They are generally kept in boxes apart by themselves. The *as* bears the head of Janus; the *semitis*, of Jupiter, with S; the *triens*, of Minerva, with four cyphers; the *quadrans*, of Hercules, with three cyphers; the *sextans*, of Mercury, with two cyphers; and the *uncia* bears the head of Rome, with one cypher. In all these pieces the prow of a ship is constantly the figure on the reverse, with very few exceptions. Sometimes, indeed, they have a shell, two heads of barley, a frog, an anchor, or a dog, on the reverse. About the time of Julius Cæsar both the obverses and the reverses of the coins began to be altered.

Silver.—Of this the *denarius* was the first and principal coin. It was stamped originally with X, denoting that the value was ten asses. On the reverse were Castor and Pollux, or a chariot of Victory. Afterwards the busts of various deities appear; and in the seventh century of Rome the portraits of illustrious persons deceased are met with: but till the time of Julius Cæsar no portrait of any living person is to be met with, Julius himself being the first who assumed that honor. The workmanship on the best and worst silver is much the same. The reverses are very curious, and point out many remarkable events in Roman history; but none of these occur till about a century before the Christian æra. The large *denarii*, with ROMA, are the most ancient; and some of these bear the Pelasgic A, not the Roman. The silver *sestertii* have a head of Mercury, with a caduceus on the reverse. The *quinarii* have always a head of Jupiter, with a Victory on the reverse.

Gold.—Most of these are of great value. Their number does not exceed 100; those of brass 200;

and of silver 2000. The aureus is the general gold coin; but two or three gold *semisses* of families likewise occur.

2. *Roman imperial coins*. Brass.—This is of three sizes; large, middle, and small. The first forms a most beautiful series, but very expensive. The various colors of the patina have the finest effect. It is the most important of all the Roman coins, and exceeds even the gold in value.

The middle brass is next in value to the former; and in it are many rare and curious coins, particularly interesting to Britons, as elucidating the history of the island.

The small brass series abounds also with curious coins. They are scarce till the time of Valerian and Gallienus, but very common afterwards. Mr. Pinkerton recommends, therefore, to form a series in silver as well as brass, as the cheapest of all the Roman coins. 'In this series,' says he, 'it is a common fault to arrange many coins which have been plated with gold or silver, the forgeries of ancient times, but which time has worn off, either wholly or in part. All real brass coins have the S. C. till the time of Gallienus; as the senate alone had the power of striking brass, while the emperor himself had that of gold and silver. When the S. C. therefore is wanting, the coin was certainly once plated; as, in general, the different type and fabric, being those of gold and silver, sufficiently show themselves. With Pertinax, A.D. 192, there is a temporary cessation of small brass; nor after him do any princes occur in that series till Valerian, A.D. 254, excepting Trajanus Decius, A.D. 250 only. After Valerian the series is continuous and common. The brass coinage gradually declined in size from the time of Severus; so that parts of the *as* could not be struck, or at least it was held unnecessary to strike them. Trajanus Decius attempted in vain to restore the coinage; and Valerian and Gallienus were forced to issue *denarii ærei* and small *assaria*. The series of large and of middle brass are of two fixed and known sizes; the former about that of our crown, the latter of the half crown: though after Severus they gradually lessen. But the small brass takes in all parts of the *as*; and every brass coin not larger than our shilling belongs to this series.

The *minimi*, indeed, or very smallest, it is proper to keep apart. The coins of Julius Cæsar in this size are of peculiarly fine workmanship. They bear his portrait reverse of Augustus, or the reverse has a crocodile, EGYPTO CAPTA. There are several with Marc Antony, and some with Cleopatra; but the more common pieces are those with only numerals on the obverse, which go to the length of XIII.; probably tickets for the baths. From the time of Nero to that of Vespasian no small brass occurs; but there are many of the latter, and of his son Titus; while Domitian has as many as Nero, and Domitia his wife almost as many. Succeeding emperors to Pertinax have also many brass coins; but from his time to that of Valerian there are no real small brass, excepting those of Trajanus Decius. After Gallienus there are many coins of this kind; and Mr. Pinkerton mentions one in Dr. Hunter's

cabinet of an unknown person named Nigrianus. The coin seems to have been struck at Carthage; and our author concludes that he was an African usurper, father to Nigrinianus.

Silver.—This series is very complete, and the cheapest of any, especially as the small brass becomes a fine supplement to it; the latter being had in plenty when the silver becomes scarce, and the silver being plentiful when the brass is scarce.

Gold.—The Roman imperial gold coins form a series of great beauty and perfection; but, on account of their great price, are beyond the purchase of private persons.

The colonial coins (speaking generally) occur only in brass; the colony of Nemausus being the only one allowed to coin silver. They begin in Spain with Julius Cæsar and Antony, and cease with Caligula, who took away the privilege of coinage from the Spanish colonies. The most beautiful are those of Corinth. The other remarkable colonial coins are those of Emerita, Ilice, Terraco, Cassandria, Babba, Berytus, Cæsarea, Petrà, Emisa, Heliopolis or Balbec, Ptolemais, Sidon, Tyre, Deultion, Diom, Troas, Rhesania, and Neapolis of Samaria, which bears a representation of Mount Gerizzim with the temple on it. On some of these coins we meet with fine representations of temples, triumphal arches, gods, goddesses, and illustrious persons. But coins with those representations are by no means common; the colonial coins till the time of Trajan bearing only a plough, or some other simple badge of a colony. Camelodunum is the only colony in Britain of which we have any coins.

The *minimi*.—This includes the smallest coins of all denominations; most of them do not exceed the size of a silver penny. No series of them was ever formed by any person, except the abbé Rothelin, whose collection passed to the queen of Spain. The reason of the scarcity of these small coins is probably their diminutive size.

Numbers of Roman coins are found in all countries once subject to that powerful people. Some have been met with in the Orkneys, and many in the most remote parts of Europe, Asia, and Africa, known to the ancients.

No *Indian* or *Chinese* coins are to be met with till a very late period; and then so rude as scarcely to be worth notice. Voltaire mentions a collection of ancient Chinese and Indian coins made by the emperor of China in 1706; but Pinkerton supposes it to have consisted only of the Greek and Roman money which had been introduced into these countries.

The *Hebrew* shekels, originally didrachms, but after the time of the Maccabees tetradrachms, are almost all forgeries of modern Jews, as well as the brass coins with Samaritan characters upon them. They have all a sprig upon one side and a vase on the other. The admission of one of them into a cabinet would almost be a disgrace to it.

Phœnician and *Punic* coins are very interesting on account of the great power and wealth of these nations: The alphabets have been cleared by their relation to the Hebrew and Syriac lan-

guages. The coins of *Palmyra* come under the same denomination with the former, Palmyra being a Syrian city.

The *Etruscan* coins have the characters of that nation, which have been explained by their affinity to the Pelasgic, or oldest Greek and Latin.

The *Spanish* coins are inscribed with two or three alphabets allied to the old Greek or Punic; but the inscriptions have not been sufficiently explained.

Gaulish coins.—These are numerous; but the most ancient have no legends; and even after the Greek letters were introduced into Gaul, by a colony at Marseilles, the legends are very difficult to be explained.

British coins.—From a passage in Cæsar's Commentaries it has been inferred, that the Britons used some sort of coins even in his time. Rude coins of copper very much mingled with tin are frequently found in England; which may probably be some of the ancient British money. They are of the size of a didrachm, the common form of the nummus aureus among the ancients. After the time of Cæsar coinage increased among the Britons; and there are many found of Cunobelinus, mentioned in the Roman History. Most of these have on one side CUNO, with an ear of wheat, a horse, a kind of head of Janus, or other symbol; and have frequently also the letters CAMV; supposed to mean Camelodunum. Sometimes the word TASCIA occurs; the meaning of which has never yet been explained.

The *coins of Japan* are thin plates of gold and silver, large and oval, stamped with little ornaments and characters. The only known ones of China are copper, about the size of a farthing, with a square hole through the middle, in order to their being strung for the convenience of enumeration or of carriage. They bear an inscription in Chinese, expressing the year of the prince's reign, without his name. It is said that Canghi, the emperor, who died in 1722, after a reign of sixty-one years, formed a complete cabinet of Chinese coins, and appointed a Mandarin to keep it. The coins of Tartary, posterior to Jenghis Khan, are rude, and generally present only inscriptions. In Thibet, Pegu, and Siam, the coins are various; but evidently of late origin, and generally bearing inscriptions on both sides. Such also are those of many smaller states in Eastern Asia. In the ancient India, where the Mahometan faith is predominant, the precept of Mahomet, which forbids the representation of any living creature has had a pernicious effect on the arts; and it is doubtful whether any Indian coins exist before the time of the Moguls. But some old coins have been found near Calcutta, of gold, silver, copper, and tin, all mingled in one base mixed metal. On one side they bear a warrior with a sword, and on the other a female idol. The later coins of India are well known, such as the pagoda, rupee, and cash (the most common copper), whence our word. All these are very thick, like the old Egyptian. On one remarkable set of rupees are represented the twelve signs, a lion on one of them, a bull on another, &c. &c. The Portuguese, English, French, and Dutch, sometimes struck coins in their settlements with Persian inscriptions on one

side and Latin on the other. Rupees and cash are known of Elizabeth, of Charles II., of the year 1730, and of other periods. The coins of Persia have continued on the Arabian model, even after the Arabian caliphs lost their dominion in that country, and bear on both sides pious inscriptions from the Koran. The Persian copper, however, has the sun and lion, the arms of Persia, on one side. Of Mamus, and some other petty kings in Arabia, we have coin during the imperial period of Rome. The brass coins of Haroun Al Raschid, the Charlemagne of Asia, and his contemporary, and of other powerful princes who resided at Bagdad, have, on the reverse, an Arabic inscription; the obverse is a transcript of any old Greek or Roman coin that fell in the way of the moneyer. This is often very perplexing to a tyro. The gold and silver coins have many inscriptions. The later Arabian coins, which are silver, bear the name and titles of the prince on one side, and some sentence from the Koran, &c. on the other. The more modern are in the shape of a fish-hook, with Arabic inscriptions. The coins of Turkey resemble those of Persia and Arabia, having merely inscriptions on both sides. The coins of Morocco, Fez, Tripoli, Algiers, &c., are upon the Mahometan plan of mere inscriptions.

Passing over Abyssinia, and the interior of Africa, as little known, and the civilised empires of America, Mexico on the north, and Peru on the south, where coinage was not practised, we proceed to the coins of Europe. In Italy, when the Roman empire in the west ceased with Romulus A.D. 476, the Gothic kings struck coins till Teias, the last of them, was conquered in 552 by Narses, the general of Justinian. Then the exarchs of Ravenna, viceroys for the Byzantine emperors, issued copper with FELIX RAVENNA, &c.; but the gold and silver of the Greek emperors sufficed for Italy. After Charlemagne, about the year 780, made a great revolution in Italy, there are coins of him struck in Rome and Milan. In the next century the modern coins of Italy begin with the silver pennies of different states. The papal coins originate with Hadrian I. 772—795, to whom Charlemagne gave leave to coin money. The silver pennies continued till a late period, with the name of the pope on the one side, and SCUS PETRUS on the other. On these coins there are rude portraits of some of the popes. Afterwards, when the pope ceased to have power in Rome, from Paschal II. till Benedict XI. in 1303, there are pennies of the Roman senate and people, bearing on one side Peter, ROMAN PRINCEPS, on the other Paul, SENAT. POPUL. Q. R. In the middle ages the chief bishops of Italy, France, and England, struck coins, as well as the pope. The first gold coin is of John XXII. 1316. The coins of Alexander VI., Julius II., and Leo X., are remarkably elegant.

Milan.—The coinage began with Charlemagne. The first coin of the family of Visconti occurs in 1330, under Azo. The set finishes with Louis XII.

Naples.—Coinage begins in 840 and 880, with duke Sergius and bishop Athanasius. The next coins are of Roger of Sicily, and Roger II. in 1130, William I. II. and Tancred. Naples and

Sicily were subdued in 1194 by the emperor of Germany; in 1255 Manfred appears; in 1266 Charles of Provence; and others till Joan in 1414: after which follow the house of Arragon, and later kings.

Venice begins in the tenth century. The first coins are silver pennies marked Veneci. Then follow the coins of Henrico Dandolo in 1192, of Ziani in 1205, &c. Gold was first coined at Venice in 1280, and copper in 1471; but the silver groats are as old as 1392.

Florence.—Silver was coined here in the twelfth century or before; but in 1252 the first gold coins struck in Europe after the eighth century made their appearance, and were named florins from the flower of the lily upon them. They were imitated by the popes, by France, and England. They have on one side St. John the Baptist standing, on the other a large fleurs de lis, and it is not doubted that the French fleur de lis took their origin from these coins. They weigh a drachm, and are no less than twenty-four carats fine, according to Italian writers, and are worth about twelve shillings.

Geneva first began to coin money in 1129, under the government of Conrad. Those of the dukes of Savoy began in the same century.

Aquileia.—Coins were issued from this city by the patriarchs from 1204 to 1440.

Ferrara.—Coins of the marquises from 1340.

French coins.—During the race of Clovis, from 490 till 751, the coins are chiefly gold trientes, with some solidi and semisses. The former are of good workmanship, with the heads of kings. The reverse has a cross with the name of the town where they were struck.

The coinage did not begin to improve till 1226 under St. Louis, when the groat appears. Its name in Italian is grossa, in French grosse, in English groat, or great coin; so called from its size in comparison with the penny; and it passed from Italy to France, to Germany, and to England. After the conquest of France by the English, base coins of many kinds were introduced; and in the year 1574, in the time of Henry III., copper was first introduced into the French coinage. Besides these, the other remarkable coins of France are, the blancs or billon groats, first issued in 1348; the ecus à la couronne, or crowns of gold, so called from the crown on one side, and begun by Charles VI. in 1384; those of Ann of Bretagne in 1498: the teston, or piece with the king's head, of Louis XII.; the Henri of Henry II., with Gaul sitting in armour, and a victory in her hand. And in 1642 Louis XIV. takes the title of Cataloniæ princeps. The first louis d'or made its appearance in 1640.

Spanish coins.—The most early series of these consist almost entirely of trientes finely done. On one side they have the head of the king with his name; and on the other a cross, with the name of the town, commonly in Bética, or the south part of Spain, where there were very many Roman colonies, and which was fertile to a proverb. The Moorsque coins of Spain, like those of the rest of the Mahometan states, present us only with inscriptions on both sides. Indeed the Mahometan religion, by its absolute refusal to allow the representation of any living

creature, has prevented the progress of coinage in any degree throughout those regions which it has overspread. The inscriptions on the ancient Spanish coins are in the Cusic or old Arabic characters.

Germany.—The emperors and many of the cities, particularly those called Hanse Towns, issued money; and many of the coins issued by the cities were superior in elegance even to those issued by the emperors.

Denmark.—Here the coinage begins with Canute the Great in 1014. The pieces are at first extremely rude, ornamented only with rings and Runic characters. These are succeeded by copper pieces, some of which have a cross, others a pastoral staff on one side, with the letter A on the other. Later coins have strokes *||||*, &c., all round them; but those of Harold, Hardicanute, and Magnus Bonus, in 1041, are of neat workmanship, and have the portraits of the princes at half-length. The coins of Nicholas or Neil, as he is called by the Danes, are rude, as well as those of Waldemar I. and the celebrated Margaret. In 1376 Olaf caused money to be struck with a grinning full face, with a crowned O upon the other side. Silver was first coined in Denmark by Philippa queen of Eric, and daughter to Henry IV. of England.

Sweden.—The coinage of this kingdom began in 818 under Biorno, on the plan of Charlemagne. These coins are marked with a cross. Next follow those of Olaf, in 1019, which were struck on the English model. During the time that Sweden was subject to Denmark, or miserably harassed by the Danes, the coins of both kingdoms were the same; but after the time of Gustavus Vasa many elegant pieces appear. In 1634 dollars were coined, with the portrait of Gustavus Adolphus, who was killed two years before: on the reverse they have the arms of Sweden, with the chemical marks of mercury and sulphur. In 1716, 1717, and 1718, Charles XII., being in extreme want of money, issued small copper coins with Saturn, Jupiter, Mars, &c., upon them to go for dollars; and on account of this scheme, baron Goertz, the suggester of it, was brought to the block.

Norway.—The coins of this country begin with Olaf in 1006; after which time there are various coins of other princes; but copper was not coined till the year 1343. Besides the coins already mentioned, there are ecclesiastic coins of France, Germany, Denmark, Sweden, Norway, &c. Those of Denmark and Sweden are numerous; but the Norwegian coins of this denomination are rare. Mr. Pinkerton describes a silver one in his possession as having arms and a mitre, with the inscription on one side *SANCTUS OLAVS REX NORVEG*; on the reverse *OLAVS DEI GRA. ARCEP. NID'SEN*, meaning *NIDROSIENSIS*, or archbishop of Nidros, now Drontheim.

Bohemia.—The coinage of this kingdom appears at a very early date, viz. in the year 909, under duke Boleslaus I. These coins are followed by others of Boleslaus II. and Emma his wife in 970; of Boleslaus III. in 1002; Jaromir in 1020; Udalrich in 1030, and other princes. The bracteate money of Ottocar I. was coined in 1197.

Poland.—The coinage of this country is nearly

as ancient as that of Bohemia. The coins are on the German model, but no particular account of them has been published.

Russia.—None of the Russian money appears to be more ancient than the thirteenth century; the first are the kopecks or silver pennies, which have upon them rude figures of animals on one side, and a man standing with a bow or spear on the other. There are likewise coins of Moscow, struck by Aristoteles the architect in 1482, the roubles or dollars and their halves. There are some of the impostor Demetrius in 1605, which are very scarce.

Prussia.—The first Prussian coins were struck at Culm by the Teutonic knights in 1230. They were silver pennies, and upon the German plan. In the next century were struck shillings, groats, and schots; the last were the largest, and are extremely rare. They have the Prussian shield, an eagle surmounting a cross, with a rose-shaped border, *MONETA DOMINORUM PRUSSIE*: on the reverse is a cross fleurie, within a border of a similar kind, having the inscription *HONOR MAGISTRI JUSTITIAM DILIGIT*.—Gold coins were struck in the same century. In the time of Copernicus the money was so debased that twelve or thirteen marks were worth but one of pure silver.

ENGLAND. The English coins are of various kinds.

Heptarchic coin are only of two sorts, viz. the *skeata* or penny of silver, and the *styca* of copper. Few of the pennies appear till after the year 700; though some are met with which bear the name of Ethelbert I. king of Kent, as old as 560. At first they had only rude figures of serpents; but in later times legends were likewise added. Most of these pennies have pagan symbols upon them. The *styca* was only coined in Northumberland, and was a very small piece about the value of half a farthing.

Coins of the chief monarchs of England.—The coins of the chief monarchs form almost a complete series from the time of Egbert to Edgar. The only chief monarch of whom there are no coins is Ethelbald, who reigned in 857. Most of these coins bear rude portraits: but the reverses are sometimes curious and interesting. Some have views of cathedrals and other buildings; particularly one of Edward the Elder in 900, which has the cathedral of York with three rows of windows, round arched, as the other Saxon and Norman buildings; the Gothic arch being quite unknown till after the twelfth century. Some coins of Anlaf king of Northumberland have the famous raven, the Danish ensign; and those of other princes have frequently very curious reverses.

Ecclesiastic coins appear of the archbishops of Canterbury, Wulfurd, in 804, Ceolnoth in 830, and Plegmund in 889.

Coins of the kings.—The silver penny, which had begun during the heptarchy, continued to be the general coin after the kingdom had been united under one head; and extends in a continued series from Egbert almost to the present reign. The only kings wanting are Edmund Ironside, Richard I., and John. At first the penny weighed twenty-two grains and a half; but towards the close of the reign of Edward III. it

fell to eighteen grains; and in that of Edward IV. to eleven. In the time of Edward VI. it was diminished to eight grains; and in queen Elizabeth's reign to 7½; at which it still continues.

Halfpennies and farthings were first struck in silver by Edward I. in 1280; the former continued to the time of the commonwealth, but the latter ceased with Edward VI. The groat was introduced by Edward III. in 1354, the half-groat or twopence is of the same date.

Shillings were first coined by Henry VII. in 1503. At first it was called testoon, from the teste, tete, or head of the king upon it: the name shilling being derived from the German schelling; under which appellations coins had been struck at Hamburg in 1407. The crown was first coined in its present form by Henry VIII. Formerly it had appeared only in gold, whence the phrase of crowns of gold; though these indeed were the largest gold coins known for a long time in France and other countries on the continent being worth about ten shillings sterling. They had their name from the crown stamped on one side, and were first coined by Charles VI. in 1384, and continued till the time of Louis XIV. The halfcrown, sixpence, and threepence, were coined by Edward VI. In 1558 queen Elizabeth coined three half-penny, and in 1561 three farthing pieces; but they were discontinued in 1582. From the year 1601 to the present time the coins of England remain the same.

Gold was coined in England by Henry III. in 1257; the piece was called a gold penny, and was larger than the silver one; and the execution is by no means bad for the time. The series of gold coinage, however, commences properly from Edward III. In 1344 this monarch first struck florins, in imitation of those in Italy; and it is remarkable, that though these coins, at the time they were first issued, bore only six shillings value, they are now intrinsically worth nineteen shillings; so much has the value of gold increased since that time. The half and quarter florin were struck at the same time, but only the last has been found. The florin, however, being inconvenient, gave place to the noble of 6s. 8d. value, and exactly half a mark. The latter had its name from being a limited sum in accounts; and was eight ounces in weight, two-thirds of the money pound. It is sometimes also called selibra, as being one half of the commercial pound of sixteen ounces. The noble had its name from the nobility of the metal; the gold of which it was coined being of the finest sort. Sometimes it is called rose noble, from both sides being impaled in an undulating circle. It continued with the half and quarter noble to be the only gold coin till the angels of Edward IV. appeared in 1465. These had their name from being stamped with the image of Michael and the dragon. The angelites of 3s. 4d. value were substituted in their place. In 1527 Henry VIII. added to the gold coins the crown and half crown at their present value; and the same year he gave sovereigns of £1 2s. 6d. and ryals of 11s. 3d. angels at 7s. 6d. and nobles at their old value of 6s. 8d. In 1546 he caused sovereigns to be coined of the value of £1, and half sovereigns in proportion. His gold crown

is about the size of our shilling, and the half crown of sixpence, but thin. All his coins, however, gold as well as silver, are much debased; and it was not without much labor and trouble that Edward VI. brought it back to its former standard. On the union of the two crowns, James gave the sovereign the name of unite; the value continuing of £1 as before. He coined also rose-ryals of £1 10s. value, spur-ryals of 15s., angels of 10s., and angelets of 5s. Under the commonwealth, the sovereign got the name of the twenty-shilling piece, and continued current till the coinage of guineas. These were so called from their being coined of Guinea gold, and were at first only to go for £1, though by a universal but tacit consent they always passed for £1 1s. Half-guineas, double guineas, and five guinea pieces, were also coined during the same reign. Quarter guineas were coined by George I., but they were found so troublesome, on account of their small size, that they were stopped within a year or two when received at the bank of England. The guinea rose to £1 1s. 6d., and continued to increase in value till 1696, when it was as high as £1 10s.; but after the recoinage, in 1697 and 1698, it fell by degrees, and at 1717 was at its old standard of £1 1s., and at that time silver was fixed at its present standard value, viz. one to fifteen and a half in weight.

Though the first money coined in Britain was copper, yet, except the Northumbrian stycas, no copper coin was found in England from the time of the Saxon conquest till the year 1672. An aversion to a copper coinage, it seems, was prevalent throughout the nation; and queen Elizabeth, who without hesitation used base money for Ireland, yet scrupled at coining copper for England. This want of small coin occasioned such an increase of private tokens for halfpennies and farthings that it became a serious object to government; and in 1594 a copper coinage was seriously thought of. This year a small copper coin was struck, about the size of a silver twopence, with the queen's monogram on one side, and a rose on the other; the running legend on both sides being THE PLEDGE OF A HALFPENNY. Of this there are patterns both in copper and silver, but both of them soon fell into disuse. On the 19th of May, 1613, king James, by royal proclamation, issued farthing tokens. They are generally of the same size with the two-pence, with two sceptres in saltier surmounted with a crown, and a harp upon the other; with an intention, as it would seem, that if they were refused in England they might pass in Ireland. In 1635 Charles I. coined those with the rose instead of the harp; but the circulation of these was entirely stopped by the vast number of counterfeits which appeared, and by the king's death in 1648. After this the private tokens began again to circulate, till put a stop to by the coinage of farthings in 1670. The workmanship of the tokens is quite contemptible. In 1672 the halfpence as well as the farthings, which had been struck two years before, began to circulate. They were of pure Swedish copper, the dyes engraved by Roettier; and they continued till the year 1684, when some disputes arose about the copper lately

obtained from the English mines. Tin farthings were coined with a stud of copper in the centre, and inscribed round the edge as the crown pieces, with *NUMMORUM FAMULUS*, 1685 or 1686. In 1685 halfpence of the same kind were coined; and the tin coinage continued till the year 1692, to the value of more than £65,000; but next year the tin was all called in by government, and the copper coinage recommenced. The farthings of queen Anne are all trial pieces, excepting those of 1714, the last year of her reign. 'They are,' says Mr. Pinkerton, 'of exquisite workmanship, exceeding most copper coins either ancient or modern, and will do honor to the engraver, Mr. Croker, to the end of time. The one whose reverse is Peace in a car, *PAX MISSA PER ORBEM*, is the most esteemed; and next to it the *BRITANNIA* under a portal. The other halfpence and farthings are less valuable.'

Scotland.—Silver pennies of Alexander I., who reigned in 1107, are believed to exist; and there certainly are some of Alexander II. in 1214. There are likewise coins of David I. in 1124; but perhaps none of Malcolm IV. his successor, whose reign was very short. There are many coins of William I. in 1165, and a large hoard of his pennies was found at Inverness in 1780.

The money of Scotland continued to be of the same value with that of England, till the country was drained by the vast ransom of David II., after which it became necessary to reduce its size; and so much did this diminution affect England, that Edward III. found himself obliged to lessen the English coin also. The diminution of the Scottish coin, however, continued still to go on until it became impracticable to keep par with that of England. In the first year of Robert III. it passed only for half its nominal value in England; in 1393 Richard II. ordered it only to go for the weight of the genuine metal it contained. In 1600 it had sunk to such a degree as to pass only for a twelfth part of the English money, and continued at that low ebb till the coinage of Scotland was entirely cancelled by the union of the two kingdoms.

Of silver coins we have only pennies till the year 1293, when, Edward I. having coined halfpence and farthings, Alexander III. of Scotland coined also halfpence, of which we have a few, but no farthings are to be met with; but there are silver farthings of Robert I. and David II. The latter introduced the groat and half groat, which completed the set of Scottish silver. It continued unaltered till the time of queen Mary, when they all ceased to be coined in silver, on account of the high price of that metal. In 1553 shillings were first coined, with the bust of the queen on one side, and the arms of France and Scotland on the other. The silver crown was first coined in 1565, which went for thirty shillings Scots; less pieces of twenty shillings and ten shillings have likewise been struck; and marks of silver, worth three shillings and four pence English, were also coined about the same time. These coins have upon them the marks xxx. xx. x. to denote their value. They are commonly called Cruckstone dollars, from the palm-trees upon them, mistaken for a remarkable *yew* at Cruckstone near Glasgow, where Henry

Darnley resided. It is described, however, in the act as a palm, with a 'shell padoc' (a tortoise) crawling up. This alludes to Darnley's marriage with the queen, as the motto from Propertius, *DAT GLORIA VIREM*, also implies. The motto *NEMO ME IMPUNE LACESSET* first appears on the Scottish coins in 1578, and the invention is given to the celebrated Buchanan. In 1582 the crown of an ounce weight went for forty shillings Scots, and was accordingly marked XL. In 1397 the mark was L., the Scottish money being then only one-tenth of the English: the mark was LX. in 1601, the value being then reduced to one-twelfth, at which it has ever since continued. In the time of Charles I. half-marks, forty and twenty penny-pieces were coined. In 1675 the Scottish dollars first appeared, in value fifty-six shillings Scots, with halves and quarters of proportional value. In 1686 James VII. coined sixty, forty, twenty, ten, and five shilling pieces; but only those of forty and ten shillings are known, with these numbers under the bust. At the union of the kingdoms all the Scottish coins were called in, and recoined at Edinburgh, with the mark £ under the bust to distinguish it; since which there has been no coinage in Scotland. The Scottish silver coins are in general equal, if not superior, in the workmanship to the English.

Gold was first issued by Robert II., about thirty years after Edward III. of England had coined the same metal in that country. The pieces were at first called St. Andrew's, from the figure of that tutelar saint upon the cross, and who appears on the obverse with the arms of Scotland, and on the reverse a lion in a shield. The lion was another name for the largest gold coin in Scotland, from the arms of the kingdom upon it. The next was the unicorn under James III., which were followed by the bonnet-pieces of James V. These last are of admirable workmanship, being almost equal to the ancient coins in this respect. In imitation of the French, the monarch we speak of diminished the size of the coin without lessening its weight; an improvement not adopted by the English for a whole century. The last gold coin in Scotland was the pistole and half pistole, of twelve and six pounds Scots. These coins have the sun under the head. The gold coins of Scotland fell in the same proportion with the silver.

The copper coinage of Scotland is of more early date than that of England. It was preceded by money of billon, or copper washed with silver, called black money. James III. first coined black farthings in 1466; and this is recorded by historians as one of his greatest faults. This kind of coinage, however, continued as late as the reign of James VI. In his time the true copper coinage began; but, as the value of Scottish money had now declined almost to the utmost, the pieces suddenly assumed a form almost resembling that of the French coins. The bodle, so called from Bothwell the mintmaster, being equal in size to the liard, and worth two pennies Scottish, was struck. The billon coin, formerly called *bas piece*, and worth six pennies Scots, was now coined in copper, and termed the *bawbee*. Thus it corresponded with the French

half sol and English halfpenny, the Scots penny being now equivalent to the French denier. Some pieces named Achesons were coined by James VI. in 1582, when the Scottish money was to the English as one to eight; but, on its being still farther reduced, they went for eight pennies, a third more than the value of the bawbee. Besides these there were the hardie and plack, the former being worth three and the latter four pennies Scots. This coinage continued through the reigns of Charles I. and II.; but Scottish coins of the former are perhaps the scarcest of any.

Ireland.—The first coins introduced into this kingdom seem to have been those of the Danes, and which have only a number of strokes round them instead of letters. In the tenth century, however, this coinage had been considerably improved; and in 930 and 994 there are pennies struck in Dublin, with the inscription on DVFLI or DYFLI, Dufin or Dyfin being the Danish name of that city. There are likewise coins of the Irish princes themselves, and of the English monarchs, struck in Ireland as early as the ninth century; and it is asserted by some that Ireland, even in these days, had been conquered by England; of which, indeed, these coins seem to be a proof. None of the Irish coins of Henry II. are to be met with; but we have some of the coins of John; and from his time to that of Henry V. the Irish coins are known by a triangle enclosing the king's head, which appears also upon the coins of other nations at this period. The harp does not appear upon the Irish coins till the time of Henry VIII. Till the time of this monarch the English and Irish coins are the same; but the same debasement of the coin which at that time took place in England extended also to Ireland; but in 1601 copper halfpence and farthings were coined also for this kingdom. These circulated in Ireland when James VI. issued his farthing tokens of copper, the latter being of two sizes, that if they failed in England they might be sent to Ireland as pennies and halfpence. In 1635 a mint was established in Dublin by Charles I.; but it was stopped by the Irish massacre, and the many disturbances which followed; since which time the scheme has not been resumed. After the massacre, St. Patrick's halfpence and farthings were coined by the Papists, bearing the legends *FLOREAT REX*, and on the reverse *ECCE GREX*; on the farthing *QUIESCAT PLEBS*. Copper tokens were struck by towns and tradesmen, as in England and Scotland. In 1680 halfpence and farthings were issued by authority, with the harp and date. In 1689 James II., having invaded Ireland, instituted a mint, and coined shillings and half crowns of all the refuse metal he could find, particularly some brass guns were employed, whence the coinage is commonly called gun money. Even this metal, however, soon became so scarce, that a diminution in its size is quite apparent from June 1689 to July 1690; and, as the month of their mintage is marked upon them, this decrease is easily perceived. In March, 1690, pennies of lead mixed with tin were issued; and on the 15th of June, the same year, crowns of white metal were coined; but these are now very scarce. In 1722 the patent for

coining halfpence and farthings was given to William Wood which excited such discontent in Ireland. From the small size allowed by the patent to these pieces, it was supposed that the patentee would have gained £60,000, but as he caused them to be struck of a size still smaller, his gains were estimated at £100,000. See COINS.

The first MODERN MEDALS of gold were those of David II. of Scotland, struck between the years 1330 and 1370. Only two of them now exist; one in the collection of Mr. Barker of Birmingham, and the other in that of Dr. Hunter. In 1478 there is a medal of James III., sent to the shrine of St. Amboise in France. It is described as of two inches and a third in diameter; the weight nearly two ounces; having on the obverse a beardless king, with long hair, sitting on a throne, holding in one hand a naked sword, in the other a shield, with the Scottish arms. On the borders of the canopy above the throne is an inscription in Gothic letters, *IN MI DEFFEN*, being corrupt French for in my defence; a common motto in the Scottish arms. Above the canopy is *VILLA BERWICI*: the reverse bears St. Andrew and his cross, *SALVUM FAC POPULUM TUUM, DOMINE*. There is also a medal of James IV. in the collar of St. Michael, having on the reverse a Doric pillar surmounted by a young Janus, standing on a hill, beyond which is the sea, and land on either side. This, however, is by some suspected to be a forgery.

The most remarkable Scottish medals are those of the unfortunate Mary. The first is properly French, having been issued at her coronation as queen of France, along with her husband king Francis II. On the obverse of this piece there are portraits of Francis and Mary, face to face, with three legends around them, the outermost containing their titles; the middle one the following sentence: *HORA NONA DOMINUS J. H. S. EXPIRAVIT BELLI CLAMANS*; the innermost the name of the city (Paris). On the reverse are the arms of France and Scotland. Fine testoons were also coined upon the same plan, and are now so rare that Dr. Hunter gave ten guineas for one he has in his collection. The same portraits appear on the fine crown of Mary and Henry, in 1565, which is so rare as to be esteemed a medal of the highest value; and Mr. Pinkerton imagines that if brought to a sale it would bring forty or fifty guineas.

Another remarkable medal of Mary represents her full-faced, and weeping, with the inscription, *O GOD, GRANT PATIENCE, IN THAT I SUFFER VRANG*. The reverse has, in the centre, *QUO CAN COMPARE WITH ME IN GRIEF? I DIE AND DAR NOCHT SEEK RELIEF*; with this legend around, *HOURT NOT THE* (figure of a heart) *QUHAIS JOY THOU ART*. There are also many counters of this unfortunate princess, being thin silver pieces of the size of a shilling. 'They all appear,' says Mr. Pinkerton, 'to have been done in France by Mary's direction, who was fond of devices. Her cruel captivity could not debar her from intercourse with her friends in France, who must with pleasure have executed her orders, as affording her a little consolation.'

The coronation medal of Charles I., struck at

Edinburgh for his inauguration, June 18th 1663, is remarkable as being the only one ever coined of Scottish gold, and the first in Britain struck with a legend on the edge. With respect to the workmanship, it is inferior to Simon's. Of these medals only three are known to exist, of which one is in the Museum. It is not uncommon in silver; in which case it sometimes wants the legend on the edge.

2. *Italian medals.* These appear in the fifteenth century, and from that time successively in most European countries. Vittore Pisano, a painter of Verona, is celebrated as the restorer of the art; but it remains to be accounted for how the medals of king David already mentioned came to exist so long before. Mr. Pinkerton considers this artist rather as an inventor than a restorer, his medals having no resemblance to the ancient coins, as being large, and all cast. They were first modelled in wax, then a mould taken from the model in fine sand and other ingredients. After a good cast was procured, it was touched up, and made a model for the rest. These medals of Pisano are almost always inscribed *OPUS PISANI PICTORIS*. The portraits of a great number of illustrious men were done by him in this manner; and in the British Museum is a large brass medal of Pisano by himself.—Other artists were Boldu, Marescotto, Matthæus de Pastus, Sperandes, Misaldone, &c. Towards the end of the century, however, the medals began to assume a more elegant appearance; and the papal ones are not only the most elegant, but the most ancient series of all the modern medals. The improvement began in the reign of Alexander VI., so famous for his own crimes and those of his nephew Cæsar Borgia. His successors, Julius II., Leo X., Hadrian VI., and Clement VII., had many of their medals designed by Raphael, Julio Romano, and other eminent painters, and the engraving executed by artists of equal merit. Among these were the celebrated Cellini, and the noted Paduan forgers of Roman coins, Cavino and Bassiano. In 1644 Cormanni, a medallic artist, was imprisoned on account of a piece which represented the pope upon one side and Olympia Maidalchina, the relation of his holiness, on the other. The unfortunate Cormanni poisoned himself. About this time the family of the Hamerani, originally from Germany, began to engrave the papal medals; which they did with surprising merit for several generations. Each of the daughters did a fine medal, as we are informed by Venuti.

Besides the papal medals there are many issued by the various states of Italy. There are medals of Frederick II. of Sicily in 1501, of several Venetian generals in 1509, of Alfonso duke of Ferrara in 1511, and of the celebrated Andrew Doria in 1528.

3. *French medals.* Till the reign of Louis XIV. the medals of this country are neither fine nor numerous; but this monarch exceeds all modern princes in this way. Many of his pieces are well designed and executed, though objectionable on account of their falsehood.

4. *Danish medals.* These appear of Christian II. in 1516; of Frederic and Sophia in 1532; of Frederic I. and Christian III., in bonnets worn

in the sixteenth century. The elephant of the house of Oldenburg is frequent upon Danish medals.

5. *Swedish medals.* These begin with Gustavus Vasa; and several of Christina are likewise to be met with. There are also some curious ones of Charles XII.

6. *Dutch medals.* These begin in 1566; and many of them are remarkable for maps and plans, which must be very interesting to posterity. 'Had the Greeks and Romans (says Mr. Pinkerton) given us maps and plans, what a fine system of ancient geography and topography a cabinet of medals must have been!'

7. *Medals of Spain, Portugal, and Germany.* The Spanish medals began with Gonsalo in 1503, many of which are curious and interesting. Under Charles V. there are many curious Spanish medals; but those of Germany begin with Frederick in 1453. They are extremely numerous; as we may easily suppose from the greatness of the empire, and the various states which compose it. There is a famous medal of Sebastian king of Portugal, famous for his unfortunate expedition into Africa in 1578; with his bust, full face, and three quarters in length. On the reverse is a shell-fish in the sea, with the moon and seven stars, bearing the inscription *SERENA FAVENT CAUSÆ*. There is also a curious lozenge-shaped coin of the same, with the arms of Portugal, and the king's name and title: on the reverse is a cross with the inscription *IN HOC SIGNO VINCES*, 1578.

8. *Satiric medals.* These began almost as soon as the knowledge of the art of coining medals was revived. They seem to have been almost unknown to the ancients. One indeed of the emperor Gallienus is supposed to have been satiric. It has on the front the emperor's bust, with the inscription *GALLIENÆ AVG.*, the reverse is *Peace in a car, PAX UBIQUE*; but this has been proved to be only a blundered coin. Some other ancient medals, however, are not liable to this objection. The first modern satiric medal published was that of Frederick king of Sicily in 1501, against his antagonist Ferdinand king of Spain. It has on one side the head of Ferdinand, with the inscription *FERDINANDUS R. AR. VETUS VULPES ORBIS*; on the reverse a wolf carrying off a sheep, *JUVVM MEVM SVAVE EST, ET ORVS MEVM LEVE*. Many others have been struck, of which the wit would now perhaps be difficult to be found out: but of all nations the Dutch have most distinguished themselves in this way; and paid very dear for their conduct, as they brought upon themselves, by one or two satiric medals, the whole power of France under Louis XIV.

9. *English medals.* The first of these is in the duke of Devonshire's collection. It is of a very large size, and done on the plan of the early Italian medals. It has on the reverse the arms of Kendal, with the inscription *TEMPORE OBSIDIONIS TURCORUM. MCCCCLXXX*. On the other side is a portrait with *IO. KENDAL RHODI TURCUPERLIERUS*. It was found last century in Knarborough forest; but Mr. Pinkerton has no doubt of its having been done in Italy. The next is that of Henry VIII. in 1545, and is of gold, larger than the crown-piece, with the king's head upon the ob-

verse, and three legends within each other, including his titles, &c. The reverse contains two inscriptions, declaring him to be the head of the church; the one in Hebrew, the other in Greek. It was imitated exactly by Edward VI., whose coronation medal is the first we have. There are two medals of Philip and Mary, whose execution is tolerably good; but those of Elizabeth are very poor. There are good medals of James I. and his queen; with a fine one of Charles I. and Henrietta, though the workmanship is much inferior to the antique. There are many good medals of Charles, with various devices upon their reverses. Under the commonwealth the celebrated Simon produced medals which are deservedly reckoned the most admirable pieces of modern workmanship. There are many good medals of Charles II., James II., and William III. Some are also found of James after his abdication. Some fine gold, silver, and copper medals, were issued in the time of queen Anne; the two last affording a series of all the great actions of the duke of Marlborough. About the year 1740 a series of medals was engraved in London by Daffier, a native of Geneva, containing all the kings of England; being thirty-six in number. They are done upon fine copper, and executed with great taste. There are besides many medals of private persons in England; so that it may justly be said that this country, for medals, exceeds almost every other in Europe.

To this account of modern coins and medals we shall add that of another set called siege-pieces, and which were issued during the time of a siege in cases of urgent necessity. These were formed of any kind of metal; sometimes of no metal: and Patin mentions a remarkable one struck at Leyden in 1574, when the place was besieged by the Spaniards. It was of thick paper or pasteboard, having a lion rampant, with this inscription, *PVGNO PRO PATRIA*, 1574; and on the reverse *LVGDVNVM BATAVORVM*. There are various siege-pieces of Charles I., both in gold and silver, some of the latter being of the value of 20s.

The nummi bracteati are a species of modern coins, somewhat between counters and money; and have their name from the word *bractea* a spangle or thin bit of metal. They are commonly little thin plates of silver, stamped as would seem with wooden dies upon one side only, with the rude impression of various figures and inscriptions. Most of them are ecclesiastic, and were struck in Germany, Switzerland, Denmark, Sweden, Norway, and a few in Poland. They continued to be in use in Germany till the end of the fifteenth century; and some are still used in Switzerland.

SECT. V.—OF THE PRESERVATION OF COINS AND MEDALS.

We now come to consider what it is that distinguishes one medal from another, and why some are so highly prized more than others. This, in general, besides its genuineness, consists in the high degree of preservation in which it is. This, by Mr. Pinkerton, is called the conservation of medals, and is by him regarded as good

and as perfect. In this, he says, that a true judge is so nice, that he will reject even the rarest coins if in the least defaced either in the figures or legend. Some, however, are obliged to content themselves with those which are a little rubbed, while those of superior taste and abilities have in their cabinets only such as are in the very state in which they came from the mint; and such, he says, are the cabinets of Sir Robert Austin and Mr. Walpole, of Roman silver, at Strawberryhill. It is absolutely necessary, however, that a coin be in what is called good preservation: which in the Greek or Roman emperors, and the colonial coins, is supposed to be when the legends can be read with some difficulty; but when the conservation is perfect, and the coin just as it came from the mint, even the most common coins are valuable.

The fine rust, like varnish, which covers the surface of brass and copper coins, is found to be the best preserver of them; and is brought on by lying in a certain kind of soil. Gold cannot be contaminated but by iron mold, which happens when the coin lies in a soil impregnated with iron; but silver is susceptible of various kinds of rust, principally green and red; both of which yield to vinegar. In gold and silver coins the rust must be removed, as being prejudicial; but in brass and copper it is preservative and ornamental; a circumstance taken notice of by the ancients. 'This fine rust,' says Mr. Pinkerton, 'which is indeed a natural varnish not imitable by the art of man, is sometimes a delicate blue, like that of a turquoise; sometimes of a bronze brown, equal to that observable in ancient statues of bronze, and so highly prized; and sometimes of an exquisite green, a little on the azure hue, which last is the most beautiful of all. It is also found of a fine purple or olive, and of a cream color or pale yellow: which last is exquisite, and shows the impression to much advantage, as paper of cream color, used in all great foreign presses, does copperplates and printing. The Neapolitan patina (the rust in question) is of a light green; and when free from excrescence or blemish is very beautiful. Sometimes the purple patina gleams through an upper coat of another color, with as fine effect as a variegated silk or gem. In a few instances a rust of a deeper green is found; and it is sometimes spotted with the red or bronze shade, which gives it quite the appearance of the East Indian stone called the blood stone. These rusts are all, when the real product of time, as hard as the metal itself, and preserve it much better than any artificial varnish could have done; concealing at the same time not the most minute particle of the impression of the coin.'

The value of medals is lowered when any of the letters of the legend are misplaced; as a suspicion of forgery is thus induced. Such is the case with many of those of Claudius Gothicus. The same, or even greater diminution in value, takes place in such coins as have not been well fixed in the dye, which has occasioned their slipping under the strokes of the hammer, and thus made a double or treble image. Many coins of this kind are found in which the one side is perfectly

well formed, but the other blundered in the manner just mentioned. Another blemish, but of smaller moment, and which to some may be rather a recommendation, is when the workmen, through inattention, have put another coin into the dye without taking out the former. Thus the coin is convex on one side and concave on the other, having the same figure upon both its sides.

The medals said by the judges in this science to be countermarked are very rare, and highly valued. They have a small stamp impressed upon them, in some a head, in others a few letters, such as *AUG: N. PROBUS, &c.*, which marks are supposed to imply an alteration in the value of the coin; as was the case with the countermarked coins of Henry VIII. and queen Mary of Scotland. Some have a small hole through them, sometimes with a little ring fastened in it, having been used as ornaments; but this makes no alteration in their value. Neither is it any diminution in the value of a coin that it is split at the edges: for coins of undoubted antiquity have often been found in this state, the cause of which has already been explained. On the contrary, this cracking is generally considered as a great merit; but Mr. Pinkerton suspects that one of these cracked coins has given rise to an error with respect to the wife of Carausius, who reigned for some time in Britain. The inscription is read *ORIUNA AUG.*: and there is a crack in the medal just before the *O* of *oriuna*. Without this crack Mr. Pinkerton supposes it would have been read *Fortuna Aug.*

Some particular soils have the property of giving silver a yellow color as if it had been gilt. It naturally acquires a black color through time, which any sulphurous vapor will bring on in a few minutes. From its being so susceptible of injuries, it was always mixed by the ancients with much alloy, in order to harden it. Hence the impressions of the ancient silver coins remain perfect to this day, while those of the modern coins are obliterated in a few years. On this account Mr. Pinkerton expresses a wish that modern states would mix a much greater proportion of alloy in their silver coins than they usually do. As gold admits of no rust, except that from iron above-mentioned, the coins of this metal are generally in perfect conservation, and fresh as from the mint.

To clean gold coins from this rust it is best to steep them in aquafortis, which, though a very powerful solvent of other metals, has no effect upon gold. Silver may be cleansed by steeping for a day or two in vinegar, but more effectually by boiling in water with three parts of tartar and one of sea-salt; on both these metals, however, the rust is always in spots, and never forms an entire incrustation as on brass or copper. The coins of these two metals must never be cleansed, as they would thus be rendered full of small holes eaten by the rust. Sometimes, however, they are found so totally obscured with rust that nothing can be discovered upon them; in which case it is best to clear them with a graver; but it may also be done by boiling them for twenty-four hours in water with three parts of tartar and one of alum; not sea-salt as in silver coins.

SECT. VI.—OF THE DISTINCTION BETWEEN GENUINE MEDALS AND COUNTERFEITS.

The most difficult and most important thing in the whole science of numismatography is the method of distinguishing the true from the counterfeit. The value put upon ancient coins made the forgery of them almost coeval with the science itself; and, as no laws inflict a punishment upon such forgers, men of great genius and abilities have undertaken the trade.

Forgeries are more conspicuous among the Roman medals than any other kind of coins; but we are not to look upon all these as the work of modern artists. On the contrary, we are assured that many of them were fabricated in the times of the Romans themselves, some of them being even held in more estimation than the genuine coins themselves, on account of their being plated, and otherwise executed in a manner to which modern forgers could never attain. Even the ancients held some of these counterfeits in such estimation, that Pliny informs us there were frequently many true *denarii* given for one false one.

Of the Roman consular coins not very many have ever been forged. The celebrated silver *denarius* of Brutus, with the cap of liberty and two daggers, is the chief instance of a consular coin of which a counterfeit is known. But it is easily rejected by this mark: in the true coin the cap of liberty is below the guard or hilt of the daggers; in the false the top of it rises above that hilt.

The imperial series of medals is the grand object of modern medallist forgeries; and the deception was at first extended to the most eminent writers upon the subject. The counterfeits are by Mr. Pinkerton divided into six classes:

I. Such as are known to be imitations, but valued on account of the artists by whom they are executed. In this class the medals of *Calvin*, the *Paduan*, rank highest; the others being so numerous that a complete series of imperial medals of almost every kind, nay almost of every medallion, may be formed from among them.

The *Paduan* forgeries may be distinguished from those of inferior artists by the following marks:—1. The former are seldom thinner than the ancient, which others almost always are. 2. They very seldom appear as worn or damaged, but the others very frequently, especially in the reverse, and legend of the reverse, which sometimes, as in forged *Othos*, appear as half consumed by time. 3. The letters in moulds taken from the antique coins have the rudeness of antiquity. 4. False varnish is commonly light green or black, and shines too much or too little. 5. The sides of forged coins are frequently quite smooth, and undistinguishable from the ancient, though to accomplish this requires but little art. 6. Counterfeit medals are frequently as irregular in their form as the genuine; but the *Paduan* are generally circular; though false coins have often little pieces cut off, in perfect imitation of the genuine. 7. In cast coins the letters do not go sharp down into the metal, and have no fixed outline; their minute angles, as well as those of the drapery, are commonly filled up, and have

not the sharpness of the genuine kind. Where the letters or figures are faint, the coin is greatly to be suspected.

The letters form the great criterion of medals, the ancient being very rude, but the modern otherwise; the reason of which, according to Cellini, is, that the ancients engraved all their matrices with the graver or burin, while the modern forgers strike theirs with a punch.

According to Vico, the false patina is green, black, russet-brown, gray, and iron-color. The trial of brass coins with the tongue is not to be despised; for, if modern, the patina tastes bitter or pungent, while if ancient it is quite tasteless.

Mr. Pinkerton informs us that all medallions from Julius Cæsar to Adrian are much to be suspected of forgery; the true medals of the first fourteen emperors being exceedingly valuable, and to be found only in the cabinets of princes.

II. The second class of counterfeit medals contains those cast from moulds taken from the Paduan forgeries, and others done by eminent masters. These are sometimes more difficult to be discovered than the former, because in casting them they can give any degree of thickness they please; and, filling the small sand holes with mastic, they retouch the letters with a graver, and cover the whole with varnish. The instructions already given for a former class, however, are also useful for those of the second, with this addition, that medals of this class are generally lighter than the genuine, because fire rarifies the metal in some degree, while that which is struck is rather condensed by the strokes.

III. *Medals cast in moulds from an antique.*—The directions given for discovering the two former deceptions hold good also in this.

IV. *Ancient medals retouched and altered.*—This is a class of counterfeits more difficult to be discovered than any other. The art (says Mr. Pinkerton) exerted in this class is astonishing; and a connoisseur is the less apt to suspect it, because the coins themselves are in fact ancient. The Italian artists alter the portraits, the reverses, and the inscriptions themselves, in a surprising manner. This fraud is distinguished by the false varnish which sometimes marks it; but, above all, by the letters of the legend, which are always altered. Though this be sometimes done with an artifice almost miraculous, yet most commonly the characters straggle, are disunited, and not in a line. In counterfeits of this kind, sometimes the obverse is not touched, but the reverse made hollow, and filled with mastic colored like the coin, and engraven with such device and legend as was most likely to bring a great price; others are only retouched in some minute parts, by which, however, the value of the coin is much diminished.

V. *Medals impressed with new devices or soldered.*—In the first article of this class the reverses have been totally filed off, and new ones impressed with a dye and hammer. The difference of fabrication in the face or reverse will be discovered at the first glance by any person of skill.

The soldered medals consist of two halves belonging to different medals, sawed through

the middle and then joined with solder. This mode of counterfeiting is common in silver and brass coins. Medals which have a portrait on each side, and which are generally valuable, are the most liable to a suspicion of this fraud. To a very nice eye the minute ring of solder is always visible; and, upon inserting a graver, the fabrication falls into halves.

VI. *Plated medals, or those which have clefts.*—It has been already remarked that many true medals are cracked in the edges, owing to the repeated strokes of the hammer, and the little degree of ductility which the metal possesses. This the forgers attempt to imitate by a file; but it is easy to distinguish betwixt the natural and artificial cleft by means of a small needle. The natural cleft is wide at the extremity, and appears to have a kind of almost imperceptible filaments; the edges of the crack corresponding with each other in a manner which no art can imitate.

The plated medals which have been forged in ancient times were long supposed to be capable of resisting every effort of modern imitation; but of late years some ingenious rogues (says Mr. Pinkerton) thought of piercing false medals of silver with a red hot needle, which gave a blackness to the inside of the coin, and made it appear plated to an injudicious eye. This fraud is easily distinguished by scraping the inside of the metal. It is, however, very difficult to distinguish the forgeries of rude money when not cast, and our author gives no other direction than to consult a skilful medallist. Indeed, notwithstanding all the directions already given, this seems to be a resource which cannot by any means safely be neglected.

Forgeries of modern coins and medals are almost as numerous as of the ancient.

SECT. VII.—OF THE VALUE OF ANCIENT COINS AND MEDALS.

All ancient coins and medals, though equally genuine, are not equally valuable. In medals, as well as in every thing else, the scarcity of a coin stamps a value upon it which cannot otherwise be derived from its intrinsic worth. There are four or five degrees of rarity reckoned up; the highest of which is called unique. The cause is generally ascribed to the smallness of number thrown off originally, or to their having been called in, and recoinced in another form.

Sometimes the rarest coins lose their value, and become common. This our author ascribes to the high price given for them, which tempts the possessors to bring them to market; but chiefly to the discovering of hoards of them. The former cause took place with queen Anne's farthings, some of which formerly sold at five guineas; nay, according to the newspapers, one of them was, several years ago, sold for no less than £960!! The latter cause took place with the coins of Canute the Great, king of England and Denmark, which were very rare till a hoard of them was discovered in the Orkneys. As such discoveries, however, produce a temporary plenty, so, when they are dispersed, the scarcity returns, while some of the common coins become rare, merely through neglect.

As there are many more copper coins of Greek cities to be met with than silver, the latter are much more valued; but the reverse is the case with those of the Grecian monarchs. All the Greek civic coins of silver are very rare, excepting those of Athens, Corinth, Messana, Dyrrhachium, Massilia, Syracuse, and some others. Of the Greek monarchic coins, the most rare are the tetradrachms of the kings of Syria, the Ptolemies, the kings of Macedon and Bithynia, excepting those of Alexander the Great and Lysimachus. Those of the kings of Cappadocia are of a small size, and hardly to be met with. Of those of Numidia and Mauritania, the coins of Juba the father are common; but those of the son and nephew, Ptolemy, are scarce. Coins of the kings of Sicily, Parthia, and Judea, are rare; the last very much so. We meet with no coins of Arabia and Comagene except in brass; those of the kings of Bosphorus are in electrum, and a few in brass, but all of them rare; as are also those of Philatenis, king of Pergamus, and of the kings of Pontus. In 1777 a coin of Mithridates sold for £26 5s. Didrachms of all kings and cities are scarce, excepting those of Corinth and her colonies; but the gold coins of Philip II. of Macedon, Alexander the Great, and Lysimachus, are common. The silver tetradrachms of all kings bear a very high price. The didrachm of Alexander the Great is one of the scarcest of the small silver Greek coins; some of the other princes are not uncommon.

The copper money of the Greek monarchs in general is scarce, but that of Hiero I. of Syracuse is uncommonly plentiful, as well as that of several of the Ptolemies of Egypt. Many of the copper civic coins of Greece, too, are also common. They are almost all of those sizes which are called small brass in the Roman series; the middle size is scarce. The largest, prior to the Roman emperors, are extremely rare. The common Grecian civic coins in small brass sell at from 3d. to 1s. 6d. according to their preservation. Very many cities, however, of which not above one or two coins are known to be extant, and those of brass bring far higher prices. 'The want of a few cities, however,' says Mr. Pinkerton, 'is not thought to injure a collection; as indeed new names are discovered every year, so that no assortment can be perfect. To this it is owing that the rarity of the Grecian civic coins is not much attended to.' The Greek copper coins are for the most part scarcer than the silver, except the Syro-Grecian, which are common, and almost all of the size called small brass. They ought (says Pinkerton) to bear a high price; but the metal and similarity to the copper civic coins, which are common, keep their actual price moderate, if the seller is not well instructed, and the buyer able and willing to pay the price of rarity.

The gold coins of Philip II. and Alexander the Great, being very common, bear but from 5s. to 10s. above their intrinsic value; but those of the other princes, being rare, sell at from £3 to £30 each, or even more.

The tetradrachms are the dearest of the silver monarchic money, selling at from 5s. to 10s., and, if very rare, from £3 to £30 each. Half of

these prices may be given for the drachmas, and the coins of the other denominations in proportion.

The gold coins of Carthage, Cyrene, and Syracuse, are worth about double their intrinsic value as metal; but the other gold civic coins are worth from £5 to £30 each. The only gold coins of Athens certainly known to exist are two purchased a few years ago by his majesty, one of which remains in the royal cabinet, and the other was given by the queen to Dr. Hunter. There was another in the British Museum, but it is suspected not to be genuine. Dr. Hunter's coin then, if sold, would draw the highest price perhaps ever given for a coin.

The silver coins of Syria, Dyrrhachium, Massilia, Athens, and a few other states, are common; the drachmas and coins of less size are worth about 5s. each; the didrachma, tetradrachms, &c., from 5s. to 10s., according to their size and beauty; the largest, *ceteris paribus*, being most valuable. The tetradrachms of cities, whose coins are common, are worth from 7s. 6d. to 21s.; but it is impossible to put a value upon the rare civic coins: ten guineas have been given for a single one.

The most rare of the consular Roman coins are those restored by Trajan. Of the others, the gold consular coins are the most rare, and the silver the most common; excepting the coin of Brutus with the cap of liberty, and a few others. Some of the Roman imperial coins are very scarce, particularly those of Otho in brass; nor does his portrait occur at all on any coin struck at Rome, owing to the shortness of his reign. His head upon the brass coins of Egypt and Antioch is very badly executed, as well as all the other imperial coins of Greek cities. The best likeness is on his gold and silver coins; the latter of which are common. The Greek and Egyptian coins are all of small or middling sizes, and have various reverses; those of Antioch, as well as most of its other imperial coins, have Latin legends. They have no other reverses but S.C. in a wreath, excepting in one or two of the large and middle brass, where the inscriptions are Greek. Latin coins of Otho in brass, with figures on the reverse, are reckoned false, though in the cabinet of D'Ennery at Paris there was an Otho in middle brass, restored by Titus, which was esteemed genuine by connoisseurs.

The leaden coins of Rome are very rare: most of them are pieces struck or cast on occasion of the Saturnalia; others are tickets for festivals and exhibitions. The tickets for theatres were made of lead, as were also the contorniate, perpetual tickets, like the English silver tickets for the opera. Leaden medallions are also found below the foundations of pillars and other public buildings, to perpetuate the memory of the founders. From the time of Augustus leaden seals were also used. A work of Tignorini on this subject, entitled *Piombi Antiochi*, is much recommended by Mr. Pinkerton.

The Roman coins, which have been blundered in the manner formerly mentioned, are very rare, and undeservedly valued by connoisseurs. The blunders in the legends of these coins, which are probably the mere effects of accidents, have been

so far mistaken by some medallists, as to have given life to imaginary emperors who never existed. A coin of Faustina, which has on the reverse SOUSTI. S. C. puzzled all the German antiquaries, till Klotz ridiculed their investigations by the following humorous interpretation: *Sine omni utilitate sectamini tantas ineptias!*

As to the Roman imperial coins, some of those which belong to the emperors whose coins are numerous, may yet be extremely valuable by having uncommon reverses. Mr. Pinkerton points out one of Augustus, with the legend C. MARIUS TROGVS, which is worth three guineas, though the silver coins of Augustus in general are not worth above 1s. In like manner the common gold coins of Trajan are not worth above 20s., while those with BASILICA ULPIA, FORVM TRAJANI, DIVI NERVA ET TRAJANVS, PATER, DIVI NERVA ET PLATINA AVG. PRO-FECTIO AVG. REGNA ASSIGNATA, REX PARTHVS, and some others, draw from £3 to £6. The ticket medals belonging to the senate are worth from 3s. to 10s.

The ancient Roman asses are worth from 2s. to £2, according to the singularity of their devices. The name of *weights*, given to the ancient Roman asses, is (says Mr. Pinkerton) exceedingly improper, as the Romans had weights of lead and brass sides, without the least appearance of a portrait upon them. These denote the weight by the number of knobs, and have likewise small *fleur-de-lis* engraved upon them. Whenever, therefore (he adds) we meet with a piece of metal stamped on both sides, with busts and figures, we may lay it down as a certain rule that it is a *coin*; but when slightly ornamented, and marked on one side only, we may with equal certainty conclude it to be a *weight*.

Consular gold coins are worth from 20s. to £5. Pompey with his sons £21, and the two Bruti £25. The silver coins are universally worth from 1s. to 2s. 6d. excepting that of the cap of liberty, and a few others, which, if genuine, will bring from 10s. to £5. The consular copper bears an equal price with the silver, but is more rare; the consular silver coins restored by Trajan are worth 20s. each.

Of the coins of other nations those of Hilderich, king of the Vandals, in silver, are worth 10s., the small brass of Athanaric 5s.; the gold of Theodoric 40s.; the second brass of Theodahat 5s.; the second brass of Badueta, being rare, are worth 10s.; the third brass 3s. each. Coins and medals with unknown characters are always scarce and dear.

Ancient British coins are very rare, and worth from 10s. to two guineas each, sometimes much more. The heptarchic coins of England are generally rare, except those called *Stycas*, which are very common, as well as those of Burgred, king of Mercia. The coins of Alfred the Great with his bust are scarce, and his other money much more so. Those of Hardycanute are so rare that it was denied they had any existence, till Mr. Pinkerton informed the public that there are three in the British Museum, upon all of which the name HARTECNUT is quite legible. Saxon pennies of the heptarchy are rare, and worth from 10s. to £10, according to their scar-

city and preservation. Coins of Edward the Confessor are pretty plentiful; others are rare, and worth from 10s. to two guineas; while two of Hardicanute are worth no less than ten guineas each.

The coins of the English monarchs after the conquest are common, except those of Richard I. and John, not one of which is to be met with; though there are some French coins of Richard I., and Irish ones of king John. 'Leake,' says Mr. Pinkerton, 'made a strange blunder in ascribing coins of different kings with two faces, and otherwise spoiled in the stamping, to Richard I.; in which, as usual, he has been followed by a misled number.' The gold medals of Henry VIII. in 1545, and the coronation medals of Edward VI., are worth £20 each; the Mary of Trezzo £3; Simon's head of Thurloe, in gold, is worth £12; his oval medal in gold, upon Blake's naval victory, is worth £30; and his trial piece, says Pinkerton, if sold, would bring a still higher price. The medals of queen Anne, which are intrinsically worth two guineas and a half, sell at £3 each; the silver, of the size of a crown, at 10s.; and the copper from 5s. to 10s. Daffier's copper pieces sell at from 2s. to 5s., and a few still higher.

The English coins struck in Ireland are of much the same value with those struck in England; but the St. Patrick's halfpence and farthings are rather scarce, and the rare crown of white metal is worth £4. The gun money of James II. and most other Irish coins are very common.

The Scottish gold coins sell higher than the English, but the others are on a par. Coins of Alexander I. and II. are rather scarce, but those of Alexander III. are pretty plentiful. Those of John Baliol are rare, and none of Edward Baliol are to be found. The shilling of queen Mary with her bust is rare, and sells for no less than £30; the half for £3; and the royal for five guineas. The French testoon of Francis and Mary brings ten guineas; and the Scottish one of Mary and Henry would bring £50; as would also the medal of James IV. The coronation medal of Francis and Mary is worth £20. Briot's coronation medal sold, in 1755, for only two guineas at Dr. Mead's sale, but would now bring £20 if sold according to its rarity.

SECT. VIII.—OF THE ARRANGEMENT OF COINS AND MEDALS.

One of the principal uses of medals being the elucidation of ancient history, the arrangement of medals is the first thing that occurs in the formation of a cabinet. The most ancient medals extant are those of Alexander I. of Macedon, who began to reign about 501 years before Christ. The series ought, therefore, to begin with him, and to be succeeded by the medals of Sicily, Caria, Cyprus, Heraclea, and Pontus. Then follow Egypt, Syria, the Cimmerian Bosphorus, Thrace, Bithynia, Parthia, Armenia, Damascus, Cappadocia, Paphlagonia, Pergamus, Galatia, Cilicia, Sparta, Pæonia, Epirus, Illyricum, Gaul, and the Alps, including the space of time from Alexander the Great to the birth of Christ, which is to be accounted the third medal-

lie series of ancient monarchs. The last series goes down to the fourth century, including some of the monarchs of Thrace, Bosphorus, and Parthia, with those of Comagene, Edessa or Osroene, Mauritania, and Judea. A most distinct series is formed by the Roman emperors, from Julius Cæsar to the destruction of Rome by the Goths; nay, for a much longer period, were it not that towards the latter part of it the coins became so barbarous as to destroy the beauty of the collection. Many series may be formed of modern potentates.

Medals likewise afford a good number of portraits of illustrious men; but they cannot easily be arranged in chronological order, so that a series of them is not to be expected. It is likewise vain to attempt the formation of a series of gods and goddesses to be found on ancient coins. Mr. Pinkerton thinks it much better to arrange them under the several cities or kings whose names they bear. A collection of the portraits of illustrious men may likewise be formed from medals of modern date.

ABBREVIATIONS used in the LEGENDS of COINS and MEDALS; after Mr. PINKERTON.

GREEK COINS.

- A. Athens, Argos, Aulus, Asylum, primi or first; as *Ἐφεσίων Ἀσίου*, 'Ephesians, first people of Asia.' A. Abassus, Abdera, Abydus on Hellespont. AB. Abydus in Egypt. ABY. Abydus on Hellespont. AO. AΘE. Athens. AIF. Aegina. AIFOEHO. Aegospotamos. AIA. Aelius, Aelia Capitolina. AIN. Aenos. AK. —AKPAΓAN. Agrigentum. AKI. Acilium. AKT. Actium. AAE. Alexandria. AM. Amyntas. AMBP. Ambracia. AMΦI. Amphilocheia. ANΘ. *Ἀνθυρατος*, Proconsul. ANTIE. Antissa. ANA. Anactoria. ANTI. Antium. AN. Ancyra. ANT. Antoninus, Antioch. AΣ. Axus in Crete. AON. Aonite. AOYE. Avenio, *Pell*. AP. Appius. AΠA. Apamea. AΠO. Apollonia. AΠTA. Aptara. AP. Aradus, Harma. APTE. Argennos. APY. Argos. API. Aricanda. APIM. Ariminum. APΣI. Arsinoe. APY. Aryca. *Ἀρχιερεὺς* or *Ἀρχον*, high priest or magistrate. AΣIAPX. Asiarchæ, presidents of the games of Asia*. AΣ. Asylum. A. Σ. *Πρωτοὺς Συρίας*, First of Syria. AΣK. Ascalon. AT. Atabyrium. ATAP. Atarnæ. AYT. Augustus. AYPHA. Aurelius. AY. AYT. *Ἀυτοκρατορ*, Emperor. AYTON. *Ἀυτονομος*, enjoying their own laws. AΦI. Aphyta. AΦP. Africanus. AX. Achaii. B. Βουλῆς, Council, Berytus, Bithynia. BATH. BAO. Bagadaonia. BAA. Valeria. BH. Berytus. BITON. Bitontum. BOI. Bœotia. BPTN. Brundisium. BY. Byzantium. Γ. ΓP. ΓPAM. Grammaticus, or keeper of the records. Γ. Caius, or Caius. ΓA. Gallus, Gallerius, Gallienus. Γ. Γνωριμουν, Illustrious. ΓEA. Gelas. ΓEP. Germanicus. ΓN. Gneius. ΓOPTY. Gortyna. ΓPA. Gravisca. Δ. Decimus, Dymæ. ΔAK. Dacicus. ΔAM. Damascus. ΔAP. Dardanum. ΔH. Δημος, the people. ΔHMAPX. ΕΞΟΥΣ. with Tribu-
- nition power. ΔE. Decelia. ΔEK. Decius. ΔEP. Derbe in Lycaonia. ΔH. Delos. ΔI. Diospolis. ΔPE. Drepanum. ΔYP. Dyrrhachium. E. Eryce. E. EPPE. Eresus. EAEY. E.eusis. EAEYO. *Ἐλευθερος*, Free. EΠI. Epidaurus. EPI. Eriza in Caria. EPX. Erchia. EPY. Erythræ. ET. ETO. *Εραος*. Year. ET, Etenna in Pamphylia. EX. *Ἐχουσια*, Power. EY. EYBO. Eubœa. EYΣ. *Εὐσεβης*. Pious. EYT. *Εὐτυχης*. Happy. EΦ. EΦE. Ephesus. ZA. Zacynthus. ZANKA. Zancle, Messina anciently so called. H. Elium. HΓ. *Ἡγεμονος*, President. HPAK. Heraclea. ΘA. Thasus. ΘE. Thespiz. ΘEE. Thessalonica. ΘH. ΘHB. Thebæ. I. IEP. *Ιερας*. Sacred. IEPAPY. Hierapythæ. IKAP. Hiccaræ. IAI. Ilium. IOY. Iulis a city, or Julius. IOYA. Julia. IΠA. Hippana. IP. Irene Ins. *Pellerin*. IΣ. Isus, Istiaæ. K. Caius; *Κοινυτος*, Quintus. K. KAIΣ. Cæsar. K. K. *Κοινων Καλικίας*, Community of Cilicia. KAIΛ. Cælius. KAA. Chalcedon. KAAAI. Calliopolis. KAMA. Camara. KAN. Canata. KAP. Capua. KAPΠ. Cappadocia. KAP. Carthæ. KAPT. Carthago. KAY. Caulonia. KE. Ceos. KEΦ. Cephalædis. KI. Cianus, Cibæum. KIA. Cilbani. KA. Clæonæ, Claudius. KAA. Clazomene. KNI. Cnidus. KO. Corinth. KOIN. *Κοινων*, Community. KOA. *Κολωνας*, Colony, Colophon. KOM. Commodus. KOP. Corcyra. KP. Cragus in Lycia. KPA. Cranos. KPH. Crete. KTH. Clemene, *Pell*. KY. Cuma, Cydonium, Cyon. KYΘ. Cythnus. KYΠ. Cyprus. KYP. Cyrene. A. or L. *Λυκαβαυτος*, Year. A. Lucius. AA. Lacedæmon. AAM. Lamea, Lampasacus. AAP. Larissa. AAPI. Larinum. AB. ABY. Leucas. AEON. Leontium. AHM. Lemnos. AII. Lipara. AIYI. Livipolis. AO. AOK. Locri. AOF. Longone. AYΓ. AYK. Lyctus. M. Marcus, Malea, Megalopolis, Mazaka. MA. Maronea, Massilia, Macedonia. MAF. Magnesia. MAKPO. Macrocephali. MAM. Mamertini. MASE. Massilia. MAZ. Mazara. ME. Menelais, on Syrian regal coins. MENEK. Menecrates. ME. MEG. Megara, Megalopolis, Melite. MEF. *Μεγας*, Great. MEE. Messina. META. Metapontum. M. MHTPO. Metropolis. MI. Miletus. MK. Mazaka of Cappadocia, on coins of Mithridates VI. MOP. Morgantia. MY. Mycenæ. MYP. Myrlea. MYTI. Mytilene. N. Naupactos. NAΣ. Naxos. NAYAPX. *Ναυαρχιδας*, enjoying a sea-port. NE. Nemea. N. NEOK. Neocori. NEOPI. Neopolis. NEP. Nerva. NIK. Nicæum, Nicomedia. NYΣ. Nysei, on coins of Scythopolis, *Pell*. OI. Oethæi. ON. *Ονρος*, being. OΠEA. Opeilius. OΠ. Opus. OPY. Orycus. OPX. Orchomenus. OYΠ. or YΠ. *Ουπατος* or *Υπατος*, Consul. OYEP. Verus. OYH. Vetus. OYESSI. Vespasianus. OYITEA. Vitellius. OΦPY. Ophrynum. II. Παπα, Προς, upon. II. ΠOHA. Publius. II. ΠA. Paphos or Patros. ΠAIE. Pæstum. IIAN. Panormus. IIAP. Paropinum. IIAPI. Paros.

* There were also Syriarchæ, Lyciarchæ; Galatarchæ, Bithyniarchæ, Cappadociarchæ, &c.

ΠΑΡΘ. Parthicus. ΠΕΡ. Perinthus. ΠΕΛ. Pella. ΠΕΡ. Pergus. ΠΕΡΤ. Pertinax. ΠΕΣΚ. Pescennius. Π. ΠΗ. Pelusium. ΠΙΝ. Pinamytæ. ΠΑΑ. Plateæ. ΠΟ. Pontus. ΠΟΛΥ. Polyrrhenum. ΠΟΣ. Posidonia. ΠΡΑΣ. Prassus. Π. ΠΡΥ. Προφάτος, Præfect. ΠΡ. ΠΡΕΕ. Πρεσβος, Legate. ΠΡΟ. Proconnesus. ΠΡΟΔΙ. Προδικορ, Curator. Π. ΠΡΩΤ. Πρωτορ, First. ΠΤ. Ptolemais. ΠΥ. Pylos. ΡΟ. Rhodes.

Σ. ΣΑ. Salamis, Samos, Syria. ΣΑ. Samosate. ΣΑΑΠ. Salapia. ΣΑΡ. Sardis. ΣΕ. Seriphus, Segeste. ΣΕΒ. Σεβαςος, Augustus. ΣΕΛ. Selinus, Seleucia. ΣΕΠΤ. Septimus. ΣΙ. Siphnos. ΣΙΔ. Side. ΣΙΝΟ. Sinope. ΣΜΥ. Smyrna. ΣΤΡ. ΣΤΡΑ. Στρατηγος, Prætor. ΣΥΒ. Sybaris. ΣΥ. ΣΥΡΑ. Syracuse. ΣΥΡ. Syria. ΣΩ. Solæ.

Τ. ΤΥΡ. ΤΑΒΑΑ. Tabala. ΤΑ. ΤΑΝΑ. Tanagra. ΤΑΡ. Tarentum, Tarsus. ΤΑΥΡ. Tauromenum. ΤΕ. Tementis. ΤΕΡ. Terina. ΤΗ. Tenus. ΤΙ. ΤΙΒ. Tiberius. ΤΡΑ. Trallis. ΤΡΙ. Tripolis. ΤΡΟ. Troizene. ΤΥΑΝ. Tyana. ΤΥ. Tyndaris. ΤΥΡ. Tyre (monogram).

ΥΕ. ΥΕΑ. Velia. ΥΠ. ΥΠΑΤ. Υπατος, Consul. Φ. Philip, Phœstus, Philuntium. ΦΑ. Phaselis. ΦΑΡ. Pharsalus. ΦΙ. Vibius, Philippopolis. ΦΙΝΕ. Phineum. ΦΑ. Flavius. ΦΟΚ. Phocæum. ΦΟΥΑ. Fulvia. ΦΥ. Phycus in Cyrene.

Χ. Chios. ΧΑΑ. Chalcis. ΧΕΡ. Chersonesus. ΧΙ. Chytri in Crete.

GREEK NUMERALS.

| | | | | | |
|--------|----|--------|-----|--------|------|
| Α | 1. | Ι | 10. | Ρ | 100. |
| Β | 2. | Κ | 20. | Σ or C | 200. |
| Γ | 3. | Λ | 30. | Τ | 300. |
| Δ | 4. | Μ | 40. | Υ | 400. |
| Ε | 5. | Ν | 50. | Φ | 500. |
| ϵ or ϛ | 6. | Ξ | 60. | Χ | 600. |
| Ζ | 7. | Ο | 70. | Ψ | 700. |
| Η | 8. | Π | 80. | Ω | 800. |
| Θ | 9. | q or q | 90. | q | 900. |

Examples.—I is 10: add Α to Ι, ΙΑ makes 11; so ΙΒ, 12; ΙΓ, 13, &c. Κ is 20, ΚΑ, 21, &c. ΠΙΑ makes 111. The English word AIR marks the grand initial numerals. On coins the numerals are often placed in retrograde order; which makes no difference in the value, as every letter is appropriated to its number. Thus ΤΑΙ or ΙΑΤ imply the same, 333. But this advantage, being unknown to the Roman numerals and Arabic cyphers, is apt to puzzle the beginner.

ROMAN COINS.

A. AULUS: in the exergue it implies the first mint, as ANT. A. coined at Antioch in the first mint. A. A. A. F. F. Auro, Argent, Ære, Flando, Feriundo. A. or AN. Annus. A. A. Apollo Augusti. A. F. A. N. Auli filius, Auli nepos. ABN. Abnepos. ACT. Actiascus, or Actium. AD. FRV. EMV. Ad fruges emundas. ADIAB. Adiabenicus. ADOP. Adoptatus. ADO. Adquisita. ADV. Adventus. AED. Aedes. AED. F. Edilitia potestate. AED. S. Aedes sacre. AED. CVR. Edilis Curulis. AED. PL. Edilis Plebis. ABL. Ælius. AEM. or AIMIL. Æmilium.

ÆT. Eternitas. AFR. Africa, or Africanus. ALBIN. Albinus. ALIM. ITAL. Alimenta Italia. ANN. AVG. Annona Augusti. A. N. F. F. Annun Novum Faustum Felicem. ANIC. Anicius. ANN. DCCCLXIII. NAT. VRB. P. CIR. con. Anno 864 Natali Urbis Populo Circenses constituti. ANT. AVG. Antonius Augur. ANT. Antonius, or Antoninus. AP. Appius. A. P. F. Argentio Publico Feriundo. A POP. FRVG. AC. A Populo Fruges Acceptæ. AQ. or AQL. Aquilius. AQUA MAR. Aqua Martia. ARAB. ADQ. Arabia Adquisita. ARR. Arrius. AVG. Augur, Augustus, Augusta. AVG. D. F. Augustus Divi Filius. AVGO. Two Augusti. AVGGO. Three Augusti. AVR. or AVREL. Aurelius.

B. The mark of the second mint in any city. BON. EVENT. Bonus Eventus. B. R. P. NAT. Bono Reipublicæ Nato. BRIT. Britannicus. BRVT. Brutus.

C. Caius, Colonia. C. A. Cæsarea Augusta. C. CÆ. or CÆS. Cæsar. CÆSS. Cæsares. CARTH. Carthage. CEN. Censor. CENS. P. Censor Perpetuus. CEST. Cestius, or Cestianus. CIR. con. Circum Condidit, or Circenses Concessit. CIVIB. ET. SIGN. MILIT. & PARTH. RECUP. Civibus, et Signis Militaribus à Parthis Recuperatis. CN. Cneius. COEL. Cælius. CON. OB. Constantinopoli Obsignata, or Constantinopoli Officina secunda, or Conflata Obryzo. COL. Colonia. CON. SVO. Conservatori suo. CONCORD. Concordia. CL. V. Clypeus Votivus. COMM. Commodus. CLOD. Claudius. CL. or CLAVD. Claudius. COS. Consul. COSS. Consules. CORN. Cornelius. CVR. X. F. Curavit Denarium Faciendum.

D. Decimus, Divus, Designatus. DAC. Dacicus. D. F. Dacia felix. D. M. Diis Manibus. DES. or DESIG. Designatus. DICT. Dictator. DOMIT. Domitianus. D. N. Dominus noster. DID. Didius. D. P. Dii Penates. DV. Divus.

EID. MAR. Idus Martiæ. EX CONS. D. Ex Consensu Decurionum. EX. S. C. Ex Senatus Consulto. EQ. ORDIN. Equestris Ordinis. EX. A. PV. Ex Argento, or Auctoritate Publica. EXER. Exercitus. ETR. Etruscus.

F. Filius, or Filia, or Felix, or Faciendum, or Fecit. FEL. Felix. FELIC. Felicitas. FL. Flavius. FLAM. Flamen. FORT. RED. Fortunæ Reduci. FOVR. Fovius for Furius. FONT. Fonteius. FRVGIF. Frugiferæ (Cereris). FVL. Fulvius. FVLO. Fulgurator.

G. Gneius, Genius, Gaudium. GA. Gaditanus. G. D. Germanicus Dacicus. GEN. Genius. GERM. Germanicus. GL. E. R. Gloria Exercitus Romani. GL. P. R. Gloria Populi Romani. GOTH. Gothicus. G. P. R. Genio Populi Romani. G. T. A. Genius Tutelaræ Ægypti, or Africæ.

HEL. Helvius. HEL. Heliopolis. HER. Herennius, or Herennia. HO. Honos. HS. Sester-tius.

I. Imperator, Jovi, Julius. IAN. CLV. Janum clusit for clausit. IMP. Imperator. IMPF. Imperatores. I. S. M. R. Juno Sospita, Mater or Magna Regina. IT. Italia, Iterum. ITE. Iterum. IVL. Julius or Julia. IVST. Justus. I—I. S. Sester-tius. I. O. M. SACR. Jovi Optimo, Maximo, Sacrum. II. VIR. Duumvir. III. VIR. R. P. C. Triumvir Reipublicæ Consti-

- tuendæ. IIII. VIR. A. P. F. Quatuorvir, or Quatuorviri, Auro, or Argentio, or Ære, Publico Feriundo. IVN. Junior.
- L. Lucius. LAT. Latinus. LEG. PROP. Legatus Proprietoris. LEG. I., &c. Legio Prima, &c. LEF. Lepidus. LENT. CVR. X. F. Lentulus Curavit Denarium Faciendum. LIBERO P. Libero Patri. LIB. PVB. Libertas Publica. LIC. Licinius. L. S. DEN. Lucius Sicius Dentatus. LVC. Lucifera. LVD. CIR. Ludi Circenses. LVD. EQ. Ludi Equestres. LVD. SAEC. F. Ludos Sæculares Fecit.
- M. Marcus, or Marius. MAR. CL. Marcellus Clodius. M. F. Marci Filius. M. OTACIL. Marcia Otacilia. MAG. OR MAGN. Magnus. MAC. Macellum. MAX. Maximus. MAR. MARTIA (aqua). MAR. VLT. Marti Ultori. MES. Messius. METAL. Metallum. MINAT. Minatius. MINER. Minerva. M. M. I. V. Municipis Municipii Julii Uticensis. MON. OR MONET. Moneta.
- N. Neops or Noster. N. C. Nobilissimus Cæsar. NAT. VRB. Natalis Urbis. NEP. Nepos. NEP. RED. Neptuno Reduci.
- O. Optimo. OB. C. S. Ob Cives Servatos. OF. Officina. OPEL. Opellius. ORB. TER. Orbis Terrarum.
- P. OR POT. Potestate. PAC. ORB. TER. Pacatori Orbis Terrarum. PAPI. Papius or Papirius. PARTH. Parthicus. PERP. Perpetuus. PERT. OR PERTIN. Pertinax. PESC. Pescennius. P. F. Pius Felix. PLAET. Platonius. P. L. N. Pecunia Loudini Notata. P. LON. S. Pecunia Londini Signata. P. M. OF PONT. MAX. Pontifex Maximus. POMP. Pompeius. P. P. Pater Patriæ. PR. PRÆTOR. P. R. Populus Romanus. PRÆF. CLAS. ET OR. MARIT. Præfectus Classis et Oræ Maritimæ. PRINC. IVVENT. Princeps Juventutis. PRIV. Privernum. PROC. Proconsul. PRON. Pronepos. PROP. Proprietor. PROQ. Proquestor. PROV. DEOR. Providentia Deorum. PVP. PUPPIEN. Puppienus.
- Q. Quintus, or Quæstor. Q. C. M. P. I. Quintus Cæcilius Metellus Pius Imperator. Q. DESIG. Quæstor Designatus. Q. P. Quæstor Prætorius. Q. PR. Quæstor Provincialis.
- R. Roma, Restituit. RECEP. Receptis, or Receptus. REST. Restituit. ROM. ET AVG. Romæ et Augusto. R. P. Respublica.
- SAEC. AVR. Sæculum Aureum. SAEC. FEL. Sæculi Felicitas. SAL. Salus. SAL. Sallustia. SARM. Sarmaticus. S. C. Senatus Consulto. SCIP. ASIA. Scipio Asiaticus. SEC. ORB. Securitas Orbis. SEC. PERP. Securitas Perpetua. SEC. TE. Securitas Temporum. SEN. SENIOR. SEPT. Septimius. SER. Servius. SEV. Severus. SEX. Sextus. SIC. V. SIC. X. Sicut Quinquennalia, sic Decennalia. SIG. Signis. S. M. Signata Moneta. S. P. Q. R. Senatus Populusque Romanus. STABIL. Stabilita (terra). SVL. Sulla.
- T. Titus, Tribunus. TER. Terentius, or Tertium. TEMP. Temporum. TI. Tiberius. TR. OF TREV. Treveris. TREB. Trebonianus. TR. MIL. Tribunus Militaris. TR. P. OR TRIB. POT. Tribunitia Potestate.
- V. Quintum. V. C. Vir Clarissimus. VESP. Vespasianus. VIB. Vibius. VICT. Victoria. VII. VIR. EPVL. Septemvir Eplonum. VIL. PVB. Villa Publica. VIRT. Virtus. VN. MR. Vene-
- randa Memoriam. VOT. X. MVLT. XX. Votis Decennialibus Multiplicatis Vicennialibus.
- X. Decem, Denarius. XV. VIR. SACR. FAC. Quindecim Vir Sacris Faciundis.

Abbreviations on the Exergue; from Banduri and Monaldini. Pinkerton.

- A. Officina Prima. ALE. Alexandria. AMB. Antiochensis Moneta Secundæ Officinæ. AN. ANT. ANTI. Antioceia. ANB. Antiochiæ Secunda Officina; to ANH. Antiochiæ Octava Officina. A. P. L. (In officina) Prima percussa Lugduni. AQ. AQL. Aquileia. AQ. O. B. F. Aquileiæ Officinæ Secundæ Fabrica. AQ. P. S. Aquileiæ Pecunia Signata. AQ. S. Aquileiæ Signata. A. AR. AREL. Arelate. A. SISC. Prima (in officina) Sisciæ.
- B. SIRM. Secunda Sirmii. B. S. L. C. Secunda Signata Lugduni.
- C. Θ Constantinopoli Nona. COMOB. Conflata Moneta Obyryo. Only on gold or silver from a gold die. CON. Constantinopoli. COMOB. Conflata Obyryo. Only on gold. CONS. Constantinopoli.
- KART. Carthago. K. O. Carthaginiensis Officina.
- L. LC. LVC. LUGDUNI, Lugduni. L. LON. Londini. L. P. Lugdunensis vel. Londenensis Pecunia. LVC. P. S. Lugduni Pecunia Signata. MDPS. Mediolani Pecunia Signata. M. K. V. T. Moneta Kartaginensis Urbis (in officina) Tertia. M. L. Moneta Lugdunensis vel Londenensis. MOSTT. Moneta Officinæ Secundæ Treverorum. MSTA. Moneta Signata Treveris.
- O. Officina. OFF. III. CONST. Officina Tertia Constantinopoli.
- PABL. Percussa or Pecunia Arelate. PLOW. Pecunia Londenensis. PLVG. Pecunia Lugdunensis. P. R. Pecunia Romana, or Percussa Romæ. P. T. Pecunia Treverensis.
- Q. AR. Quinta Arelatensis (officina).
- R. RO. ROM. Romæ. RA. Ravenne. ROPS. Romæ Pecunia Signata.
- S. AR. Arelate Signata. S. CONST. Signata Constantinopoli. SIS. Sisciæ. SS. P. Sisciensis Pecunia. SISC. V. Siscia Urbs. SMA. Signata Moneta Antiochiæ. S. M. HER. Signata Moneta Heracleæ. S. M. N. Signata Moneta Nicomediæ. S. M. R. Signata Moneta Romæ. S. T. Signata Treveris.
- TESOB. Thessalonice Officina Secunda. THEOPO. Theopoli. TR. Treveris. TROB. Treveris Officina Secunda.
- A List of ROMAN COLONIES whose COINS remain.
- Abdera in Spain. Acci in Spain. Actulla in Africa. Ælia Capitolina in Judea. Agrippina in Germany. Antiochia in Pisidia. — in Syria. Apamea in Bithynia. Arna in Thessaly. Astigi in Spain.
- Babba in Mauritania Tingitana. Berytus in Phœnicia. Bilbilis in Spain. Bostra in Arabia. Bracara Augusta in Spain. Buthrotum in Epirus.
- Cabellio in Gaul. Cæsar-Augusta in Spain. Cæsarea in Palestine. Calagurris in Spain. Calpe in Spain. Camelodunum in Britain. Carrhæ in Mesopotamia. Carteia in Spain. Carthago in Africa. Carthago Nova in Spain. Cassantum in Spain. Cassandria in Macedon

Celsa in Spain. Clunia in Spain. Coilla in Numidia. Comana in Cappadocia. Corinthus in Greece. Cremna in Pisidia. Culla in Thrace. Damascus in Coelosyria. Dertosa in Spain. Deulton in Thrace. Dium in Macedon. Ebora in Spain. Edessa in Mesopotamia. Emeita in Spain. Emesa in Phœnicia. Ergavica in Spain. Germe in Galatia. Graecuris in Spain. Hadrumetum in Africa. Heliopolis in Coelosyria. Hippo Regius in Africa. Iconium in Lycaonia. Ilerda in Spain. Illergavonia in Spain. Illici in Spain. Iol in Mauritania. Italica in Spain. Lelia in Spain. Laodicea in Syria. Leptis in Africa. Lugdunum in Gaul. Neapolis in Palestine. Nemausus in Gaul. Nisibis in Mesopotamia. Norba Cæsarea in Mauritania. Obulco in Spain. Oea in Africa. Olba in Pamphylia. Osca in Spain. Osicarda in Spain. Panormus in Sicily. Parium in Mysia. Paralys in Lycaonia. Patricia (Corduba) in Spain. Pella in Macedon. Philippi in Macedon. Philippopolis in Arabia. Ptolemais in Phœnicia. Ruscino in Gaul. Romula (Hispalis) in Spain. Rhœnna in Mesopotamia. Sabaria in Hungary. Saguntum in Spain. Sebaste in Palestine. Segobriga in Spain. Sidon in Phœnicia. Singara in Mesopotamia. Sinope in Pontus. Stobi in Macedon. Tarraco in Spain. Thessalonica in Macedon. Truducta (Julia) in Spain. Troas in Phrygia. Turiase in Spain. Tyana in Cappadocia. Tyrus in Phœnicia. Valentia in Spain. Vienna in Gaul. Viminacium in Mœsia. Utica in Africa.

ABBREVIATIONS ON COLONIAL COINS.

ACCI. Accitana Colonia, *Guadis in Spain*. ADI. Adjutrix legio. AEL. MYN. COEL. Ælium Municipium Cœla, *near Cestos on the Hellespont*. AST. Astigitana, *Aceja in Andalusia*.
 a. A. Braccara Augusti, *Braga in Portugal*.
 c. A. Cæsarea Antiochiæ. c. A. A. P. OF PATR. Colonia Augusta Aroe Patrensis. CAB. Cabellio. c. A. BVT. Colonia Augusti Buthrotum, *in Epirus*. c. A. C. Colonia Augusta Cæsarea. c. A. I. Colonia Augusta Julia, *Cadix*. c. A. E. Colonia Augusta Emerita, *Merida*. CAL. Calagurris, *Calahorra in Spain*. c. A. O. A. F. Colonia Antoniana Oea. Aug. Felix. Tripoli in Africa. c. A. PI. MET. SID. Colonia Æmilia Pia Metropolis Sidon. c. A. R. Colonia Augusta Rauracorum or Colonia Asta Regia: *Angat in Switzerland, or Ast near Xeres de la Frontera in Spain*. c. C. A. Colonia Cæsarea Augusta, *Sargossa in Spain*. c. C. COL. LUG. Claudia Copia Colonia Lugdunensis. c. C. I. E. Colonia Campestris Julia Babba, *in Mauritania*. c. C. I. B. D. D. Colonia Campestris Julia Babba Decreto Decurionum. c. C. I. H. P. A. Colonia Concordia Julia, Hadrumetina, *Pia Augusta*. c. CIV. D. D. P. Corona Civica data Decreto Publico. c. C. N. A. Colonia Carthago Nova Augusta. c. C. N. C. D. D. Colonia Concordia, *Norba Cæsareana, Decreto Decurionum*. c. COR. Colonia Corinthus. c. C. R.

Ducentesima Remissa. c. C. S. Colonia Claudia Sabaria, *in Hungary*. c. F. P. D. Colonia Flavia Pacensis Develton. Develton. *Develton in Thrace*. c. G. I. H. P. A. Colonia Gemella Julia Hadriana, *Pariana, Argusta*. c. I. C. A. Colonia Julia Concordia Apamea. c. I. A. D. Colonia Julia Augusta Dertona, *Tortona near Milan*. c. I. A. V. Colonia Julia Aug. Cadix. c. L. AVG. F. SIM. Colonia Julia Augusta Felix Sinope. c. I. B. Colonia Julia Balba, *in Mauritania*. c. I. C. A. P. A. Colonia Julia Carthago Augusta Pia Antiqua, or Corinth, or Carthago Nova. c. I. CAL. Colonia Julia Calpe, *Gibraltar*. c. I. F. Colonia Julia Felix. Cadix. c. I. G. A. Colonia Julia Gemella Augusta. c. I. I. A. Colonia Immunis Illice Augusta, *Elche in Spain*. c. I. N. C. Colonia Julia Norba Cæsareana, or Alcantara: sometimes it means Col. Julia Nova Carthago. c. I. V. Colonia Julia Valentia, *Valencia in Spain*. c. V. T. Colonia Victrix Tarraco. c. L. I. COR. Colonia Laus Julia Corinthus. c. L. I. N. AVG. Colonia Laus Julia Nova Augusta, *Laus or Lodi in Lucania*. c. M. L. Colonia Metropolis Laodicea, *in Coelosyria*. CO. DAM. METRO. Colonia Damascus Metropolis. COHH. PRET. VII. P. VI. F. Cohortes Prætorianæ Septimum Pia, Sextum Felices. COH. I. CR. Cohors Prima Cretensis. COH. PRET. PHIL. Cohors Prætoriana Philippensium. COL. AEL. A. H. MET. Colonia Ælia Augusta Hadrumetina Metropolis, *in Africa*. COL. AEL. CAP. COMM. P. F. Colonia Ælia Capitolina Commodiana Pia Felix. COL. ALEX. TROAS. Colonia Alexandriana Troas. COL. AMAS. OF AMS. Colonia Amastriana, *in Paphlagonia*. COL. ANT. Antioch in Pisidia. COL. ARELAT. SEXTAN. Colonia Arelate Sextanorum, *Arles*. COL. AST. AVG. Colonia Astigitana Augustana, *Augusta, Eceja in Spain*. COL. AVG. FEL. BER. Colonia Augusta Felix Berytus. COL. AVG. FIR. Colonia Aug. Firma, *Eceja*. COL. AVG. IUL. PHILIP. Colonia Augusta Julia Philippensis. COL. AVG. PAT. TREVIR. Colonia Augusta Paterna Trevirorum, *Treves in Germany sent from Paternum in Italy*. COL. AUR. KAR. COMM. P. F. Colonia Aurelia Karrhæ Commodiana Pia Felix, or Carneatum Comnagene, or *Carrha in Asia*. COL. B. A. Colonia Braccara Augusta, *Braga*. COL. BRYT. L. V. Colonia Berytus Legio Quinta. COL. CABE. Colonia Cabellio. COL. CAES. AVG. Colonia Cæsarea Augusta, *in Palestine*. COL. CAMALODVN. Colonia Camalodunum, *England*. COL. CASILIN. Colonia Casilinum, *Castellazo in Italy*. COL. CL. PTOL. Colonia Claudia Ptolemais, *Acre in Phœnicia*. COL. DAMAS. METRO. Colonia Damascus Metropolis. COL. F. I. A. P. BARCIN. Colonia Flavia Julia Augusta Pia, *Barcino or Barcelona*. COL. FL. PAC. DEVL. Colonia Flavia Pacensis Deulton, *Develton in Thrace*. COL. MA. ME. T. Colonia Hadriana Mercurialis Thœnitana, *Mercurialis, Fermo in Italy, and Thenes in Africa*. COL. H. (OF HEL.) LEG. H. Colonia Heliopolis Legio Heliopolitana. COL. HEL. I. O. M. H. Colonia Heliopolis Jovi Optimo Maximo Heliopolitano. COL. IVL. AVG. C. I. F. COMAN. Colonia Julia Augusta Concordia

Invicta Felix Comanorum, drawn from Concordia in Italy, and sent to Comana in Cappadocia. COL. IVL. AVG. FEL. CREMNA. Colonia Julia Augustus Felix Cremna, in *Pamphylia*. COL. IVL. CER. SAC. AVG. FEL. CAP. OECVM. ISE. HEL. Colonia Julia Certamen Sacrum Augustum Felix Capitolinum Oecumenicum Iselaticum Heliopolitanum. COL. IVL. CONC. APAM. AUG. D. D. Colonia Julia Concordia Apamea Augusta Decreto Decutionum. COL. IVL. PATER. NAR. Colonia Julia Paterna Narbonensis. COL. NEM. Colonia Nemausus. COL. NICEPH. COND. Colonia Nicephorium Condita, in *Mesopotamia*. COL. PATR. Colonia Patrensis, or Patricia, *Patras in Greece, or Cordova in Spain*. COL. P. F. AVG. F. CAES. MET. Colonia Prima Flavia Aug. Felix Casarea Metropolis, in *Palestine*. COL. P. FL. AVG. CAES. METROP. P. S. P. same as above, P. S. P. is Provincia Syriae Palestinae. COL. PR. F. A. CAESAR. Colonia Prima Flavia Augusta Casarea, in *Palestine*. COL. R. F. AVG. FL. C. METROP. Colonia Romana Felix Aug. Flavia Casarea Metropolis. *The same.* COL. ROM. Colonia Romulea, or *Seville*. COL. ROM. LVO. Colonia Romana Lugdunum. COL. RVS. LEG. VI. Colonia Ruscino Legio Sexta, *Roussillon in France*. COL. SABAR. Colonia Saburiae. COL. SABAS. Sebaste in *Palestine*. COL. SER. G. NEAPOL. Colonia Servii Galbae Neapolis, in *Palestine*. COL. V. I. CELSA, or COL. VIC. IVL. CELSA. Colonia Victrix Julia Celsa, *Kelso in*

Spain. COL. VIC. IVL. LEF. Colonia Victrix Julia Leptis, in *Africa*. COL. VIM. AN. I. OF II. &c., Colonia Viminacium Anno primo. *Widdin in Servia*. COL. VLP. TRA. Colonia Ulpia Trajana: *Kellen, or Warhal, in Transylvania*. CO. P. F. CAE. METRO. Colonia Prima Flavia Casarea Metropolis. CO. P. I. A. Colonia Pacensis Julia Augusta, or Col. Octaviana. C. B. I. F. S. Colonia Romana Julia Felix Sinope. C. T. T. Colonia Togata Tarraco. C. V. IL. Colonia Victrix Illice, *Elche in Spain*.

D. Decuriones. D. C. A. Divus Cæs. Aug. DERT. Dertosa.

GEN. COL. NER. PATR. Genio Coloniae Neronianae Patrensis. G. L. S. Genio Loci Sacrum.

M. H. ILLERGAUVONIA DERT. Municipium Hibera Illergavonia Dertosa, *Tortosa in Catalonia*.

M. M. I. V. Municipis Municipii Julii Uticensis. M. R. Municipium Ravennatium.

MVN. CAL. IVL. Municipium Calagurris Julia, in *Spain*. MVN. CLUN. Municipium Clunia, *Crunna in Spain*. MVN. FANE. EL. Municipium Fanestre Aelium, *Fano*. MVN. STOB. Municipium Stobense, *Sobi in Macedon*. MV. TV. Municipium Turiato, in *Spain*.

N. TR. ALEXANDRIÆ COL. BOSTR. Nerviae Trojanæ Alexandrianæ Coloniae Bostre, in *Palestine*.

SEP. COL. LAVD. Septima Colonia Laudicea, or Laodicea. SEP. TYR. MET. Septima Tyrus Metropolis.

TABLE I.

The VALUE and PROPORTION of ANCIENT GRECIAN COINS, ACCORDING TO ARBUTHNOT.

| | | | | | | | | | | (Sterling.) | s. | d. | grs. | |
|--------|---------|-----------|------------|--------|----------|-----------------|---------|-----------------|------------------|-------------|----|----|-----------------|---|
| Lepton | | | | | | | | | | | 0 | 0 | 0 $\frac{1}{2}$ | |
| 7 | Chalcus | | | | | | | | | | 0 | 0 | 0 $\frac{1}{2}$ | |
| 14 | 2 | Dichalcus | | | | | | | | | 0 | 0 | 1 $\frac{1}{2}$ | |
| 28 | 4 | 2 | Hemiobolus | | | | | | | | 0 | 0 | 2 $\frac{1}{2}$ | |
| 56 | 8 | 4 | 2 | Obolus | | | | | | | 0 | 1 | 1 $\frac{1}{2}$ | |
| 112 | 16 | 8 | 4 | 2 | Diobolus | | | | | | 0 | 2 | 2 $\frac{1}{2}$ | |
| 224 | 32 | 16 | 8 | 4 | 2 | Tetrobolus | | | | | 0 | 5 | 0 $\frac{1}{2}$ | |
| 336 | 48 | 24 | 12 | 6 | 3 | 1 $\frac{1}{2}$ | Drachma | | | | 0 | 7 | 3 | |
| 672 | 96 | 48 | 24 | 12 | 6 | 3 | 2 | Didrachmon | | | 1 | 3 | 2 | |
| 1344 | 192 | 96 | 48 | 24 | 12 | 6 | 4 | 2 | Tetradrachstater | 2 | | 7 | 0 | |
| 1680 | 240 | 120 | 60 | 30 | 15 | 7 $\frac{1}{2}$ | 5 | 2 $\frac{1}{2}$ | 1 $\frac{1}{2}$ | Pentadr. | 3 | | 2 | 3 |

Note. Of these the drachma, didrachma, were of silver; the rest, for the most part, of brass. The other parts, as tridrachm, triobolus, &c., were sometimes coined.

Note also, the drachma is here, with the generality of authors, supposed equal to the denarius: though there is reason to believe the drachma was somewhat the weightier. See DRACHMA and DENARIUS.

(Sterling.) £. s. d.

The Grecian gold coin was the stater aureus, weighing two Attic drachms, or half of the stater argenteus; and exchanging usually for twenty-five Attic drachms of silver; in our money 0 16 1 $\frac{1}{2}$.

According to our proportion of gold to silver 1 0 9

There were likewise the stater Cyzicenus, exchanging for twenty-eight Attic drachms, or 0 18 1
 Stater Philippicus, and stater Alexandrinus, of the same value.
 Stater Daricus, according to Josephus, worth fifty Attic drachms, or 1 12 3½
 Stater Croesus, of the same value.

TABLE II.

The VALUES and PROPORTIONS of JEWISH COINS.

| (Sterling.) | | | | £. | s. | d. |
|-------------|-------|-------|---------------------|----|--------|---------|
| Gera | 10 | Bekah | | 0 | 0 | 1½ |
| | 10 | | | 0 | 1 | 1½ |
| | 20 | 2 | Shekel | 0 | 2 | 3½ |
| | 1200 | 120 | 50 | 5 | 14 | 0½ |
| | | | Maneh, MinaHebraica | | | |
| | 60000 | 6000 | 3000 | 60 | Talent | 342 3 9 |

Solidus aureus, or sextula, worth 0 12 0½
 Silius aureus, worth 1 16 6
 A talent of gold, worth 5475 0 0

NUMITOR, the son of Procas, king of Alba, and the brother of Amulius. Procas, before his death, made him joint-heir with Amulius to the Alban crown, on condition of their reigning annually by turns; but Amulius, on getting possession of the throne, excluded Numitor, whose son Lansus he put to death, and obliged Ilia, otherwise called Rhea Sylvia, Numitor's only daughter, to become a vestal. This princess, becoming pregnant, declared that she was with child by the god Mars; and afterwards brought forth Remus and Romulus, who at length killed Amulius and restored Numitor to the throne, A. A. C. 754. See *ROME*.

NUMMARY, *adj.* Lat. *nummus*. Relating to money.

The money drachma in process of time decreased; but all the while the ponderal drachma continued the same, just as our ponderal libra remains as it was, though the *nummery* hath much decreased.

Arbuthnot on Coins.

NUMSKULL, *n. s.* } Numb (dull, torpid),
 NUMSKULLED, *adj.* } and skull. A stupid fellow; a dolt; the skull of such a fellow: dull, doltish.

They have talked like *numskulls*. *Arbuthnot.*
 Hocus has saved that clod-pated, *numskulled*, ninnyhammer of yours from ruin, and all his family.

Arbuthnot.

Or toes and fingers, in this case,
 Of *Numskulls* self should take the place. *Prior.*

NUN, *n. s.* } Sax. *nun*; Teut. *nun*; Dan. and
 NUNNERY. } Fr. *nonore*. A woman secluded from the world by a religious vow: nunnery is the abode of women thus secluded.

My daughters
 Shall all be praying *nuns*, not weeping queens.

Shakespeare.

A devout *nun* had vowed to take some young child, and bestow her whole life; and utmost industry, to bring it up in strict piety.

Hammond.

put your sister into a *nunnery*, with a strict command not to see you, for fear you should have wrought upon her to have taken the habit. *Dryden.*
 The most blooming toast in the island might have been a *nun*. *Addison.*

Every shepherd was undone,
 To see her cloistered like a *nun*.

Swift's Miscellanies.

NUN. See MONASTERY, and MONK. That there were females in the ancient Christian church who made public profession of virginity, before the monastic life was known, appears from the works of Cyprian and Tertullian. These, for distinction's sake, are sometimes called ecclesiastical virgins, and were commonly enrolled in the canon or matricula of the church. They differed from the monastic virgins chiefly in this, that they lived privately in their father's houses, whereas the others lived in communities; but their profession of virginity was not so strict as to make it criminal in them to marry afterwards, if they thought fit. The consecration of virgins was usually performed publicly in the church by the bishop. The virgin made a public profession of her resolution, and then the bishop put upon her the accustomed habit of sacred virgins. One part of this habit was a veil, called *sacrum velamen*; another was a mitre or coronet worn upon the head. At present, when a woman is to be made a nun, the habit, veil, and ring, of the candidate are carried to the altar; and she herself, accompanied by her nearest relations, is conducted to the bishop, who, after mass and an anthem (the subject of which is, 'that she ought to have her lamp lighted, because the bridegroom is coming to meet her'), pronounces the benediction: then she rises up, and the bishop consecrates the new habit, sprinkling it with holy water. When the candidate has put on her religious habit, she presents herself before the bishop, and sings on her knees, *Ancilla Christi sum*, &c.; then she receives the veil, and afterwards the ring, by which she is married to Christ, and lastly, the crown of virginity. When she is crowned, an anathema is denounced against all who shall attempt to make her break her vows. In the more barbarous times the nunneries often afforded protection and support to otherwise destitute and unprotected females, and were almost the only seminaries for the instruction of the sex. But they were also ready instruments of tyranny in the hands of avarice or of superstition, and many were thus immured for life to atone for a father's sins, or facilitate the transmission of the family estate.

NUN, NOON, or WEDINOOON, a region of Morocco, south of the high range of the Atlas, which renders its subjection and revenues extremely partial and precarious. The soil is neither so fertile as that of the other districts of Morocco, nor so barren as that of the immense deserts which extend on the south towards Soudan and Tombuctoo. Gum, wax, and ostrich feathers, are the only articles of export: the inhabitants, however, carry on a considerable and lucrative trade with Central Africa. A large amount of gold-dust is imported thence into this country; and Nun forms a general depot for the merchandise between Soudan and Mogodger. But the whole extent of its coast, from Agadeer

to Cape Bojador, does not afford a single harbour, and only two roads for shipping. The consequence is that European vessels, when driven upon these shores, have repeatedly suffered dreadful shipwreck. The character of the inhabitants is that of the most cruel barbarians: they not only seize the property of a vessel, but treat the mariners as slaves. Jackson calculates them at 300,000.

NUN'CHION, *n. s.* From *Noon*, which see, and *Teut. essin*, food, says Mr. Thomson. A portion of food taken between meals.

Laying by their swords and truncheons,
They took their breakfasts or their *nunchions*.

Hudibras.

NUN'CIO, *n. s.* } *Ital. nuncio*; *Lat. nun-*
NUN'CIATURE, *n. s.* } *cius*. A messenger or
ambassador; and particularly an envoy from
the pope: nunciature is his office.

She will attend it better in thy youth,
Than in a *nuncio* of more graye aspect. *Shakespeare.*

They honoured the *nuncios* of the spring; and
the Rhodians had a solemn song to welcome in the
swallow. *Browne.*

This man was honoured with the character of
nuncio to the Venetians. *Atterbury.*

NUNCIO, or **NUNTIO**,* an ambassador from
the pope to some Catholic prince, state, or con-
gress. The word *nuncio* has the same import
with ambassador; but is restrained in its use to
the ambassadors of the papal see alone, as that
of *internuncio* is to their envoys extraordinary.

NUNDYDROOG, a celebrated fortress and
country of Hindostan, in the province of Mysore.
The former is built on the summit of a
rock, about 1700 feet high, three-fourths of its
circumference being inaccessible. Our forces
took it by storm in 1791, after a three weeks'
siege. It stands in long. 77° 53'E., and lat. 13°
22' N.

NUNIA, a village of Irak, Arabia, distinguished
as being on the site of the ancient Nineveh.
Its history after it ceased to be the seat of
empire is almost unknown; and in the time of
Adrian it was completely destroyed. A city was
afterwards erected on the spot, bearing the name
of Ninus; and in Mr. Kinneir's opinion it is the
ruins of that city, and not of the ancient Nineveh,
that are now visible. They consist of a rampart
and fosse, forming an oblong square, not exceeding
four miles in compass. The wall is on an
average twenty feet high; but there is no appearance
of stones or rubbish of any kind.

NUNJENGODE, a town of the south of India,
in the Mysore, and standing on the south bank
of the Cubany River. It is inhabited chiefly by
brahmins, who are supported by a celebrated
and handsome pagoda, to which immense numbers
resort to make their annual offering. This temple
is very ancient, and kept in good repair. Long. 76° 50' E.,
lat. 12° 1' N.

NUPTIAL, *adj.* } *Fr. nuptial*; *Lat. nuptia-*
NUPTIALS, *n. s.* } *lis, nuptie*. Pertaining or
relating to marriage; constituting or performed
in marriage: *nuptials* is a word used only in the
plural (except by Shakespeare) for the marriage
ceremony.

Confirm that amity
With *nuptial* knot, if thou vouchsafe to grant
Bona to England's king. *Shakespeare.*

Lift up your countenance, as 'twere the day
Of celebration of that *nuptial*, which
We two have sworn shall come. *Id.*

Because propagation of families proceedeth from
the *nuptial* copulation, I desired to know of him
what laws and customs they had concerning marriage.
Beacon.

Whoever will partake of God's secrets, must pare
off whatsoever is amiss, not eat of this sacrifice with
a defiled head, nor come to this feast without a *nuptial*
garment. *Taylor.*

Then all in heat
They light the *nuptial* torch. *Milton's Paradise Lost.*
Let our eternal peace be sealed by this,
With the first ardour of a *nuptial* kiss. *Dryden.*

This is the triumph of the *nuptial* day,
My better *nuptials*, which in spite of fate,
For ever join me to my dear Morat. *Id.*

NUREMBURG, the former capital of Franconia,
and once a free city of the German empire, is
now a large and handsome town, included in the
Bavarian dominions. It is distinguished by its
manufactures of maps, prints, mathematical
and musical instruments, curious clock-work,
and several articles in iron, steel, ivory, wood,
and alabaster: there is also a celebrated school
for painting. Here gunpowder is said to have
been first invented, by Berthold Schwartz, a
monk. Martin Behem, to whom the discovery
of America has been ascribed, was also born
here; and Albert Durer, the famous engraver
on wood.

Nuremburg is included in the province or
circle of Rezat, and stands in a wide, sandy, but
well-cultivated plain, on the river Pegnitz, a
large but not navigable stream, which, flowing
from east to west, divides it into two nearly
equal parts. That on the north of the river is
called the Sebald side; the other, on the south,
the Laurence side: each deriving its name from
a principal church. The town is surrounded
with an old weak wall and ditch, with round
towers: it is entered by eight gates, and its
circumference is full three miles. The form of
the town is nearly a square; and several of the
streets are wide, but for the most part they are
both crooked and irregular. The houses are
generally of stone.

Of the public edifices the chief are the fort
called Reichsfeste, the occasional residence of
the emperors of the middle ages, but now used
as a granary: the council-house, built in 1619,
a fine old structure; and the church of St. Sebald.
The public library is remarkable for its MSS.
and early editions of books. The church of St.
Ægidius, rebuilt in 1718, has elegant columns,
and a beautiful altar-piece by Van Dyke. The
regalia and imperial jewels of a remote age were
long preserved in a church adjoining the river.
Nuremburg has also public warehouses for merchandise,
and public fountains. In former times it was
noted for the extent of its funds, for the relief
of the poor and for education. It has still an
alms-office, founding hospital, and house of correction.

The establishment of the burgrave of Nuremburg
took place in 1060; and the purchase of the city
rights by the inhabitants from the emperors in
1427. Its trade soon received from Venice a
strong impulse; and it shared with Augs-

buy the exchange of the spiceries, silks, drugs, and other articles of the south, in return for the bulky commodities of the north. But its chief traffic and grand consequence lay at this early period in its manufactures, this having been four centuries ago a noted place for all kinds of fine hardware. Paper was also made here at an early date; and it has long been famous for its extensive bookselling and printing establishments. It is fifty-eight miles E. S. E. of Wurzburg, and 100 north by west of Munich.

NURSE, *n. s. & v. a.* *Fr. nourrice, nourrir.*

NURSER, *n. s.*

NURSERY,

NURSING,

son; hence, an old woman; state of being nursed: to nurse is to nourish or bring up a child; to feed; maintain; tend or cherish in sickness or weakness; pamper; fondle: nursery is the act, office, or place of nursing, and is also applied to a place appropriated to the rearing of young trees: a nursling is one under or just come from a nurse's care; a fondling.

Shall I call a nurse of the Hebrew women, that she may nurse the child. *Exodus ii. 7.*

Thy daughters shall be nursed at thy side.

Isaiah lx. 4.

I was nursed in swaddling cloaths with cares.

Wisdom vii. 4.

This keeping of cows is of itself a very idle life, and a fit nursery for a thief. *Spenser on Ireland.*

Then was she held in sovereign dignity, And made the nursling of nobility. *Spenser.*

Never master had,

A page so kind, so duteous, diligent, So fast, so nurse-like. *Shakespeare. Cymbeline.*

I' the swathing cloaths, the other from their nursery

Were stolen. *Id.*

One Mrs. Quickly, which is in the manner of his nurse, or his dry nurse, or his cook. *Shakespeare.*

Rome, the nurse of judgment, Invited by your noble self hath sent

One general tongue unto us. *Id. Henry VIII.*

I loved her most, and thought to set my rest On her kind nursery. *Id. Ling Lear.*

See where he lies, inhearsed in the arms Of the most bloody nurse of his arms.

Shakespeare.

Unnatural curiosity has taught all women, but the beggar, to find out nurses, which necessity only ought to commend. *Raleigh.*

You see before you the spectacle of a Plantagenet, who hath been carried from the nursery to the sanctuary, from the sanctuary to the direful prison, from the prison to the hand of the cruel tormentor, and from that hand to the wide wilderness; for so the world hath been to me. *Bacon.*

Your nursery of stocks ought to be in a more barren ground than the ground is whereunto you remove them. *Id.*

And what is strength, but an effect of youth, which if time nurse, how can it ever cease? *Davies.*

Can wedlock know so great a curse, As putting husbands out to nurse? *Cleveland.*

If thou repentest truly, pluck up sin by the roots, take away its principle, strangle its nurse, and destroy every thing that can foment it.

Jeremy Taylor.

Our monarchs were acknowledged here, That their churches nursing fathers were.

Donham.

She went forth among her fruits and flowers, To visit how they prospered, bud and bloom Her nursery: they at her coming sprung, And touched by her fair tendance gladlier grew.

Milton.

I was his nursling once, and choice delight, His destined from the womb. *Milton's Agonistes.*

Put into your breeding pond three melters for one spawner; but if into a nurse pond or feeding pond, then no care is to be taken. *Walton.*

A nursery erects its head, Where queens are formed and future heroes bred; Where unfledged actors learn to laugh and cry.

Dryden.

In their tender nonage, while they spread Their springing leaves and lift their infant head, Indulge their childhood, and the nursling spare. *Id.*

Him in Egerian grove Aricia bore, And nursed his youth along the marshy shore.

Id.

A luxurious court is the nursery of diseases; it breeds them, it encourages, nourishes, and entertains them. *L'Estrange.*

By what fate has vice so thriven amongst us, and by what hands been nursed up into so uncontroled a dominion? *Locke.*

The Niscans in their dark abode, Nursed secretly with milk the thriving god.

Addison.

My paper is a kind of nursery for authors; and some, who have made a good figure here, will hereafter flourish under their own names. *Id.*

Forthwith the devil did appear, Not in the shape in which he plies At miss's elbow when she lies; Or stands before the nursery doors, To take the naughty boy that roars. *Prior.*

Can tales more senseless, ludicrous, and vain, By winter-fires old nurses entertain? *Blackmore.* They have public nurseries, where all parents are obliged to send their infants to be educated.

Swift.

But I wi' my sweet nurslings here, Nae mate to help, nae mate to cheer, Pass widowed nights and joyless days, While Willie's far frae Logan braes. *Burns.* In cities vice is hidden with most ease, Or seen with least reproach; and virtue, taught By frequent lapse, can hope no triumph there Beyond the achievement of successful flight. I do confess them nurseries of the arts, In which they flourish most; where in the beams Of warm encouragement, and in the eye Of public note, they reach their perfect size.

Cowper.

Philosophy, as thou shalt hear, when she Shall have her praise, her praise and censure too, Did much, refining and exalting man; But could not nurse a single plant that bore True happiness.

Follok.

NURSE, military, a person, generally a female, whose sole business it is to attend the sick in the general or regimental hospital. She is under the immediate direction of the surgeon, and receives at the rate of one shilling per diem. Her duty is to prepare the slops and comforts for the sick, and occasionally to assist in administering medicines, cooking the victuals, washing, &c.; and for every ten men confine to bed by fever an additional nurse and order-man should be allowed. All the patients, who are able, are every morning and evening to assist in cleaning and airing the hospital, carrying away

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dirt, &c., and by every means to assist the helpless. The additional allowance to the sergeants, orderly-men, and nurse, in regiments of the line, is to be made by the paymaster; and, in regiments of militia and fencibles, the surgeons are to pay them out of their allowances.

NURTINGEN, a town of Wirtemberg, on the Neckar, fourteen miles south-east of Stutgard. Its inhabitants, about 3400, are employed in agriculture, and manufactures of mother of pearl, musical instruments, &c. It has a good school, and had formerly a well endowed hospital. Long. 9° 20' E., lat. 48° 37' 36" N.

NURTURE, *n. s.* & *v. a.*

NUTRICATION, *n. s.*

NUTRIMENT,

NUTRIMENTAL, *adj.*

NUTRITION, *n. s.*

NUTRITIOUS, *adj.*

NUTRITIVE,

NUTRITURE, *n. s.*

tion : to educate ; train ; feed ; maintain : nutrition is the manner of being fed : nutriment, aliment ; food ; that which nourishes : nutrimental, alimental ; nourishing : nutrition, the act or quality of nourishing or supporting strength or growth ; also that which nourishes : nutritious and nutritive are synonymous of nutrimental, and nutriture is an obsolete word for the power of nourishing.

Thou broughtest it up with thy righteousness, and nurturedst it in thy law, and reformedst it with thy judgment. 2 *Eedr.* viii. 12.

She should take order for bringing up of wards in good nurture, not suffer them to come into bad hands. *Spenser.*

The thorny point

Of bare distress, hath ta'en from me the show
Of smooth civility ; yet am I inland bred,
And know some nurture.

Shakespeare. As You Like It.

This slave

Has my lord's meat in him,
Why should it thrive and turn to nutriment ?

Shakespeare.

He was nurtured where he had been born in his first rudiments, till the years of ten. *Wotton.*

Never make a meal of flesh alone, have some other meat with it of less nutritive. *Harvey.*

For this did the angel twice descend ?

Ordned thy nurture holy, as of a plant
Select and sacred. *Milton's Agonistes.*

Besides the teeth, the tongue of this animal is a second argument to overthrow this airy nutrition. *Browne.*

New parts are added to our substance to supply our continual decayings ; nor can we give a certain account how the aliment is so prepared for nutrition, or by what mechanism it is so regularly distributed. *Glauville's Scepsis.*

O may'st thou often see

Thy furrows whitened by the woolly rain

Nutritious ! secret nitre lurks within. *Philips.*

When an insolent despiser of discipline, nurtured into impudence, shall appear before a church government, severity and resolution are that government's virtues. *South.*

The stomach returns what it has received, in strength and nutriment, diffused into all the parts of the body. *Id.*

While the secretory, or separating glands, are too

much widened and extended, they suffer a great quantity of nutritive juice to pass through.

Blackmore.

By virtue of this oil vegetables are nutrimental, for this oil is extracted by animal digestion as an emulsion. *Arbutnot.*

The obstruction of the glands of the mesentery is a great impediment to nutrition ; for the lymph in those glands is a necessary constituent of the aliment before it mixeth with the blood. *Id.*

The heat equal to incubation is only nutritious ; and the nutritious juice itself resembles the white of an egg in all its qualities. *Id.*

They suppose mother earth to be a great animal, and to have nurtured up her young offspring with a conscious tenderness. *Bentley.*

Fixed like a plant on his peculiar spot,
To draw nutrition, propagate and rot. *Pope.*

Does not the body thrive and grow,

By food of twenty years ago ?

And is not virtue in mankind,

The nutriment that feeds the mind ?

Swift's Miscellanies.

Now tell me, dignified and sapient sire,

My man of morals, nurtured in the shades

Of Academus—is this false or true ?

Is Christ the abler teacher, or the schools ?

Cowper.

Inveterate habits choke the' unfruitful heart,
Their fibres penetrate its tenderest part,
And, draining its nutritious powers to feed
Their noxious growth, starve every better seed. *Id.*

NUT, *n. s.*

NUT-BROWN, *adj.*

NUT-CRACKERS, *n. s.*

NUT-GALL,

NUT-PATCH,

NUT-JOBBER, OR

NUT-PICKER,

NUT-HOOK,

NUTMEG,

NUT-SHELL,

NUT-TREE.

Sax. þnut ; Belg.

noot ; Swed. not ; Fr.

noir ; Lat. nur. A

fruit of certain trees ; a

knotted excrescence,

either of trees or ani-

mal bodies ; a small

mechanical body (pro-

bably so named from

its shape), having cogs :

nut-brown is brown

as a nut : nut-crackers, an instrument to enclose and break nut-shells : nut-gall, the excrescence of an oak tree : nut-hatch, nut-jobber, or nut-picker, names for the picus martius (see PICUS) : a nut-hook is a hook used to get at the nuts of trees ; hence (meta.), a mere tool : nutmeg (nut and *Fr. muguet*), the fruit of the MYRTICA MOSCHATA, which see : nut-shell and nut-tree explain themselves, the last being commonly used for the hazel.

I to my pleasant gardens went,
Where nutmegs breathe a fragrant scent.

Sandys.

I could be bounded in a nut-shell, and count myself a king of infinite space. *Shakespeare.*

Nut-hook, nut-hook, you lie. *Id. Henry IV.*

One chanced to find a nut

In the end of which a hole was cut,

Which lay upon a hazel root,

There scattered by a squirrel ;

Which out the kernel gotten had ;

When quoth this Fay, dear queen be glad,

Let oberon be ne'er so mad,

I'll set you safe from peril.

Drayton's Nymphiad.

Of trees you shall have the nut-tree and the oak.

Peacham.

To have a grave wise man wrangle for nut-shells, and a judge scramble for apples, is an indecency

bigger than the sin, and dishonours him by the disproportion.

Jer. Taylor.

This faculty may be more conveniently used by the multiplication of several wheels, together with nuts belonging unto each, that are used for the roasting of meat.

Wilkins.

Young and old come forth to play,
Till the live-long day-light fail,
Then to the spicy nut-brown ale.

Milton's Poems.

When this nut-brown sword was out,
With stomach huge he laid about.
In vegetable excretions, maggots terminate in flies of constant shapes, as in the nutgalls of the outlandish oak.

Browne.

The second integument, a dry and flosculus coat, commonly called mace; the fourth a kernel included in the shell, which lieth under the mace, is the same we call nutmeg.

Id.

Like beating nut-trees make a larger crop.

Dryden.

Two milk-white kids ran frisking by her side,
For which the nutbrown lass, Erithasis,
Fall often offered many a savoury kiss.
A fox had me by the back, and a thousand pound to a nut-shell, I had never got off again.

Id.

L'Estrange.

It seems as easy to me, to have the idea of space empty of body, as to think of the hollow of a nut-shell without a kernel.

Locke.

Clocks and jacks, though the screws and teeth of the wheels and nuts be never so smooth, yet if they be not oiled, will hardly move.

Ray.

King Hardicanute, 'midst Danes and Saxons stout,
Caroused in nut-brown ale, and dined on grout.

King.

He cast every human feature out of his countenance, and became a pair of nut-crackers.

Addison's Spectator.

Nuts are hard of digestion, yet possess some good medicinal qualities.

Arbuthnot on Aliments.

The nutmeg is a kernel of a large fruit not unlike the peach, and separated from that and from its investient coat, the mace, before it is sent over to us; except that the whole fruit is sometimes sent over in preserve, by way of sweet-meat, or as a curiosity. There are two kinds of nutmeg; the male, which is long and cylindrical, but it has less of the fine aromatick flavour than the female, which is of the shape of an olive.

Hill.

NUT, BLADDER. See STAPHYLEA.

NUT, CASHew. See ANACARDIUM.

NUT, COCOA. See COCOS.

NUT, EARTH. See BUNIUM.

NUT, FAUSEL. See ARECA.

NUT, HAZEL. See CORYLUS.

NUT, FIG. See BUNIUM.

NUTMEG. See MYRISTICA.

NUTRITION, in the animal economy, is the repairing, by food, the continual loss which the different parts of the body undergo. The motion of the parts of the body, the friction of these parts with each other, and especially the action of the air, would destroy the body entirely, if the loss was not repaired by a proper diet, containing nutritive juices; which being digested in the stomach, and afterwards converted into chyle, mix with the blood, and are distributed through the whole body for its nutrition. In young persons, the nutritive juices not only serve to repair the parts that are damaged, but also to increase them, which is called growth. In grown

persons, the cuticle is every where constantly desquamating, and again renewing; and in the same manner, the parts rubbed off, or otherwise separated from the fleshy parts of the body, are soon supplied with new flesh; a wound heals, and an emaciated person grows plump and fat. Buffon, to account for nutrition, supposes the body of an animal or vegetable to be a kind of mould, in which the matter necessary to its nutrition is modelled and assimilated to the whole. As to the nature of this matter, he supposes that there exists in nature an infinite number of living organical parts, and that all organised bodies consist of such organical parts; so that their existence is constant and invariable; so that the matter which the animal or vegetable assimilates to its substance is an organical matter of the same nature with that of the animal or vegetable, which consequently may augment its volume, without changing its form or altering the quality of the substance in the mould. 'As to the power that communicates it, there exist,' says he, 'in nature certain powers, as that of gravity, that have no affinity with the external qualities of the body, but act upon the most intimate parts, and penetrate them throughout, and which can never fall under the observation of our senses.' And, lastly, he supposes that the internal mould itself is reproduced, not only by a similar power, but that it is the very same power that causes the unfolding and reproduction thereof; 'for it is sufficient,' proceeds he, 'that in an organised body that unfolds itself there be some part similar to the whole, in order that this part may one day become itself an organised body, altogether like that of which it is actually a part. See ALIMENT and PHYSIOLOGY.

NUX VOMICA, a flat, compressed, round, and poisonous fruit, about the breadth of a shilling, brought from the East Indies. Its surface is not much corrugated; and its texture is firm like horn, and of a pale grayish-brown color. It is said to be used as a specific against the bite of a species of water-snake. It is considerably bitter and deleterious; and has been used in doses from five to ten grains twice a-day or so, in intermittents, particularly quartans, and in contagious dysentery. The strychnus Ignatii is a tree of the same kind, producing a gourd-like fruit, the seeds of which are improperly called St. Ignatius's beans. These, as also the woods or roots of some such trees, called lignum colubrinum, or snakewood; are very narcotic bitters, like the nux vomica.

To NUZZLE, *v. a.* Corrupted from nurse; but some writers have supposed it to come from nozzle or nose, and in that sense used it. To nurse; to foster; thrust forward the nose.

Old men long nuzzled in corruption, scorning them that would seek reformation.

Sidney.

He charged through an army of lawyers, sometimes with sword in hand, at other times nuzzling like an eel in the mud.

Arbuthnot.

Sir Roger shook his ears, and nuzzled along, well satisfied that he was doing a charitable work.

Arbuthnot's John Bull.

The blessed benefit, not there confined,
Drops to the third who nuzzles close behind.

Rope.

NYCHTHEMERON, among the ancients signified the whole natural day, or day and night,

consisting of twenty-four hours, or twenty-four equal parts. See DAY. Before the Jews had introduced the Greek language into their discourse, they used to signify this space of time by the simple expression of a night and a day. It is proper here to observe that all the eastern countries reckoned any part of a day of twenty-four hours for a whole day; and say a thing that was done on the third or seventh day, &c., from that last mentioned, was one after three or seven days. And the Hebrews having no word which exactly answers to the Greek *Νυχθημερον*, signifying 'a natural day of twenty-four hours,' use night and day, or day and night, for it. So that to say a thing happened after three days and three nights, was, with them, the same as to say it happened on the third day. This explains what is meant by 'the Son of Man's being three days and three nights in the heart of the earth.'

NYCTANTHES, Arabian jasmine, a genus of the monogynia order, and diandria class of plants; natural order forty-fourth, sapiaræ: COR. CAL. octofid: perianth. dicoccous: CAPS. two-celled: SEEDS solitary: species one only.

N. arbor tristis, the melancholy or sorrowful tree. This shrub, the pariatacu of the Bramins, grows naturally in sandy places in India, particularly in Ceylon and Java, where it is produced in great abundance, and attains the height of eighteen or twenty feet. It rises with a four-cornered stem, bearing leaves that are oval, and taper to a point. They stand opposite on short foot-stalks: are of a shining brownish-green on the upper side, a more vivid green on the under, and of a taste that is astringent and somewhat bitter. From the middle rib, on the under surface of the leaves, proceed on both sides a number of costulæ or smaller ribs, which run nearly to the margin, and mark the surface with the impression of their arched furrows. The flowers, which are white and highly odoriferous, having a sweet smell, consist of one petal deeply divided into eight parts, which are narrower towards the stalk, and dilated towards the summit. They stand upon foot-stalks, which emerge from the origin of the leaves; are rigid, obliquely raised towards the top, grow opposite in pairs, and are divided into three short lesser branches, which each support five flowers placed close together, without partial foot-stalks. The fruit is dry, capsular, membranaceous, and compressed. It is generally asserted of this plant, that the flowers open in the evening, and fall off the succeeding day. Fabricius and Paludanus, however, affirm, from actual observation, that this effect takes place only in such flowers as are immediately under the influence of the solar rays. Grimmus remarks, in his *Laboratorium Ceylonicum*, that the flowers of this tree afford a fragrant water, which is cordial, refreshing, and often employed with success in inflammations of the eyes. The tube of the flower, when dried, has the smell of saffron; and, being pounded and mixed with sanders wood, is used by the natives of the Malabar coast for imparting a grateful fragrantcy to their bodies, which they rub or anoint with the mixture.

NYCTASTRATEGI, among the ancients, were officers appointed to prevent fires in the

night, or to give alarm and call assistance when a fire broke out. At Rome they had the command of the watch, and were called nocturni triumviri, from their office and number.

NYCTEUS, in fabulous history, a son of Neptune, by Celene, king of Lesbos, or Thebes; who married Amalthæa, by whom he had Nyctimene and Antiope, the mother of Amphion and Zethus. He was mortally wounded in battle by Epopeus, who had carried off Antiope.

NYCTIMENE, a daughter of Nyctæus, who, having committed incest with her father by means of her nurse, was changed into an owl by Minerva.

NYE (Philip), an English nonconformist, a native of Sussex, was born about 1596. After attending at a grammar school, he was sent to Oxford, and entered a commoner of Brazen-nose College, in 1615, whence he removed to Magdalen Hall. He was admitted A. B. and A. M. in 1619 and 1622, about which time he entered into orders, and was, in 1620, curate of St. Michael's church in Cornhill, London. Resolving, however, to reject the constitution of the Church of England, he became obnoxious to all the censures of the episcopal court; to avoid which he went to Holland, in 1633. He continued at Arnheim till 1640; when, the power of the parliament beginning to prevail over the king, he returned home, and was soon after made minister of Kimbolton in Huntingdonshire, by Edward lord Kimbolton, then earl of Manchester. In 1643 he was appointed one of the assembly of divines at Westminster, and became a great champion of the Presbyterians, and of the solemn league and covenant; and, having married the daughter of Stephen Marshall, was sent with his father-in-law into Scotland the same year, to expedite the taking of the covenant. After his return both houses of parliament took the covenant the same year; when he preached a sermon in defence of it, showing its warrant from Scripture, and was rewarded with the rectory of Acton near London, in the room of Dr. Daniel Featley, who was ejected. Not long after, however, Nye disagreed with the assembly, and opposed their plan of discipline, joining the Independents. In December, 1647, he was sent with Stephen Marshall, to the king at Carisbrook Castle, in attendance upon the commissioners then appointed. Nye was also employed about that time to obtain subscriptions from the apprentices in London, &c., against a personal treaty with the king, while the citizens of that metropolis were petitioning for one. In April, 1648, he was employed, as well as Marshall and Joseph Caryl, by the Independents, to invite the secured and secluded members to sit in the house again, but without success. In 1653 he was appointed one of the triers for the approbation of public preachers; in which office he not only procured his son to be clerk, but, with the assistance of his father-in-law, obtained for himself a living of £400 a-year. In 1654 he was joined with Dr. Lazarus Seaman, Samuel Clark, Richard Vines, Obadiah Sedgwick, Joseph Caryl, &c., as an assistant to the commissioners appointed by parliament to eject such as were then called scandalous and ignorant minis-

ters and schoolmasters' in London. After the Restoration, in 1660, it was debated for several hours together, whether he and John Goodwin should be deprived of the benefits of the act of indemnity. The result was, that 'if Philip Nye, clerk, should, after the 1st September, 1660, accept or exercise any office, ecclesiastical, civil, or military, he should, to all intents and purposes in law, stand as if he had been totally excepted for life.' In November, 1662, he was suspected to be engaged in Tongue's plot; but the suspicion was never proved. He died in Cornhill, London, in September 27th, 1672, and was buried in the upper vault of the said church.

NYIREGYHAZA, a town of Hungary, in the palatinate of Szaboles. It contains churches for Lutherans, Calvinists, Catholics, and Greek Christians. The employment of the inhabitants (about 8000) consists chiefly in the tillage of the vicinity, the rearing of cattle, and making wine. Twenty-nine miles north of Debreczin, and 123 E. N. E. of Pest.

NYKOPING, a town and government of Sweden, containing the western and most considerable part of Sodarmaria. The town is well built, with broad and straight streets; but its population is not above 2400. Its manufactures and its trade and navigation are considerable; and the Swedish language is supposed to be spoken in its greatest purity here. Forty-nine miles south-west of Stockholm.

NYLAND, a province of European Russia, in Finland, bounded by the gulf of Finland, Carelia, Tavastland, and Finland Proper. Its area is 4880 square miles, consisting of good pasturage, and extensive forests. The fisheries supply a considerable part of the food; the mineral chiefly found is copper. It has several small lakes, from one of which issues the Kymamene. Inhabitants 115,000.

NYL-GHAU, in zoology, an East Indian animal, classed as a species of antelope, by Drs. Gmelin and Pallas, Messrs. Pennant, Kerr, &c., though others reckon it a species of bos. The name denotes a blue cow, or bull. The nyl-ghau is larger than any ruminant of this country, except the ox; its flesh is delicious. In size it appears to be between black cattle and deer; and in its form also there is a very evident resemblance to both. Its body, horns, and tail, are not unlike those of a bull, and the head, neck, and legs, are very like those of a deer. Mr. Hunter, who dissected it, apprehends that it is an entirely new and distinct genus. The color, in general, is ash or gray, from a mixture of black hairs and white; the height of the back is about four feet, and the trunk, from the root of the neck to the pendulous tail, is about the same length; along the ridge of the neck the hair forms a short and thin upright mane; the legs are small in proportion to their length; the neck is long and slender as in the deer; at the throat there is a shield-like spot of beautiful white hair; and lower down, on the beginning of the convexity of the neck, there is a mane-like tuft of long black hair. There are six grinders on each side of the jaw; and four incisores in each half of the lower jaw; the horns are seven inches long, and of a triangular shape. The nyl-ghau

eats oats, but is fonder of grass and hay. It is vicious and fierce in the rutting season, but at other times tame and gentle. The female differs so much from the male that we should scarcely suppose them to be of the same species. She is much smaller, both in height and thickness. In her shape and yellowish color she very much resembles deer, and has no horns; yet has four nipples, and is supposed to go nine months with young; she has commonly one at a birth, and sometimes twins. The young male nyl-ghau resembles the female in color.

NYMPH, *n. s.* Lat. *nympha*; Gr. *νυμφη*. A goddess of the woods, meadows, or waters.

And as the moisture which the thirsty earth

Sucks from the sea to fill her empty veins,

From out her womb at last doth take a birth,

And runs a nymph along the grassy plains. *Davies.*

This resolve no mortal dame,

None but those eyes could have overthrown;

The nymph I dare not, need not name. *Waller.*

Tending all to nymphish war. *Drayton.*

NYMPH, in entomology, that state of winged insects between their living in the form of a worm, and their appearing in the winged or most perfect state. The eggs of insects are first hatched into a kind of worms or maggots; which afterwards pass into the nymph state, surrounded with shells or cases of their own skins; so that in reality, these nymphs are only the embryo insects wrapped up in this covering, from which they at last get loose, though not without great difficulty. During this nymph state the creature loses its motion. Swammerdam calls it *nympha aurelia*, or simply *aurelia*; and others give it the name of *chrysalis*, a term of the like import; but modern entomologists prefer the term *pupa* to both. See **ENTOMOLOGY**.

NYMPHS, in mythology, were certain inferior goddesses, inhabiting the mountains, woods, waters, &c., said to be the daughters of Oceanus and Tethys. All the universe was represented as full of these nymphs, who are distinguished into several ranks or classes. The general division of them was into celestial and terrestrial. The former were called *Uranizæ*, and were supposed to be intelligences that governed the heavenly bodies or spheres; the latter, called *Epigeizæ*, presided over the several parts of the inferior world, and were divided into those of the waters and those of the earth. The nymphs of the water were the *oceanides*, or nymphs of the ocean; the *nereids*, the nymphs of the sea; the *naiads* and *ephydriades*, the nymphs of the fountains; and the *limniades* the nymphs of the lakes. The nymphs of the earth were the *oreades*, or nymphs of the mountains; the *napææ*, nymphs of the meadows; and the *dryads* and *hamadryads*, were nymphs of the forests and groves. Besides these we meet with nymphs who took their names from particular countries, rivers, &c., as the *Cithæroniades*, so called from Mount Cithæron in Bæotia; *Dodonides*, from Dodona; *Tiberiades*, from the Tiber, &c. Goats were sometimes sacrificed to the nymphs; but their constant offerings were milk, oil, honey, and wine. They were supposed to enjoy longevity, but not to be immortal. They are described as sleepless, and dreaded by the country people. They were rum-

ceptible of passion. The Argonauts landing on the shore of the Propontis, in their way to Colchus, sent Hylas, a boy, for water, who discovered a lonely fountain, in which the nymphs Eunica, Malis, and Nycheia, were preparing to dance; and these seeing him were enamoured, and, seizing him by the hand as he was filling his vase, pulled him in. The nymphs, it was the popular persuasion, occasionally appeared; and nympholepsy is characterised as a phrenzy which arose from having beheld them. On Cithæron, in Bœotia, there were nymphs called Sphragitides, whose cave, once also oracular, was on a summit of the mountain. Their dwellings had generally a well or spring of water; the former often a collection of moisture condensed or exuding from the roof and sides; and this, in many instances, being pregnant with stony particles, concreted, and marked its passage by incrustations, the ground-work in all ages and countries of idle tales framed or adopted by superstitious and credulous people. A cave in Paphlagonia was sacred to the nymphs who inhabited the mountains about Heraclea. It was long and wide, and pervaded by water, clear as crystal. There also were seen bowls of stone, and nymphs and their webs and distaffs, and curious work, exciting admiration.

NYPHÆ, in anatomy, two membranaceous parts, situated on each side of the rima. See **ANATOMY**.

NYPHÆA, in antiquity, structures about which the learned are not agreed. Some take them to have been grottoes, deriving their name from the statues of the nymphs with which they were adorned; but that they were considerable works appears from their being executed by the emperors, or by the city prefects. In an inscription, the term is written *nymfium*. Scarce any of these nymphæa have lasted down to our time; but one was discovered some years ago between Naples and Vesuvius. It is a square building, with only one entrance, and some steps that went down to it. On the right hand, in entering towards the head, there is a fountain of the purest water; along which is laid a naked *Arethusa* of the whitest marble; the bottom or ground is of variegated marble, and encompassed with a canal fed by the water from the fountain; the walls are set round with shells and pebbles of various colors; by the setting of which, as in a mosaic picture, are expressed the twelve months of the year, and the four political virtues; also the rape of *Proserpine*; *Pan*, playing on his reed, and soothing his flock; besides the representations of nymphs swimming, sailing, and wantoning on fishes, &c. It seems pretty evident that the nymphæa were used as baths; for, at the same time that they were furnished with pleasing grottoes, they were also supplied with cooling streams, by which they were rendered exceedingly delightful, and drew great numbers of people to frequent them. Silence seems to have been a particular requisite here, as appears by this inscription:—‘*Nymphis loci, bibe, lava, tace.*’

NYPHÆA, in botany, the water lily; a genus of the monogynia order, polyandria class of plants; natural order fifty-fourth, miscellanæ: con. polypetalous: cal. tetraphyllous or penta-

phyllous; berry multilocular and truncated. There are five species:—

1. *N. alba*, the white water lily, is a native of Britain, and grows in lakes and ditches. The root has an astringent and bitter taste, like those of most aquatic plants that run deep into the mud. The Highlanders make a dye with it, of a dark chestnut color.

2. *N. lien-hoa*, or *nenufar*, a native of China, is highly extolled in that country for its virtues, and ranked among those plants which are employed in the composition of the liquor of immortality. The seeds are there eaten as we eat filberts in Europe: they are more delicate when they are green, but harder of digestion; they are preserved in many different ways with sugar. The root of this plant is also admitted by the Chinese to their tables: in whatever manner it be prepared, it is equally wholesome. Great quantities are pickled with salt and vinegar, which they reserve to eat with their rice. When reduced to powder, it makes excellent soup with water and milk. The leaves of the *nenufar* are much used for wrapping up fruits, fish, salt provision, &c. When dry, the Chinese mix them with their tobacco, to render it softer and milder.

3. *N. lotus*, the Egyptian lotus, with heart-shaped toothed leaves, thought to be peculiar to Egypt, is thus mentioned by *Herodotus*: ‘when the river Nile is become full, and all the grounds round it are a perfect sea, there grow a vast quantity of lilies, which the Egyptians call *lotus*, in the water. After they have cut them, they dry them in the sun; then, having parched the seed within the *lotus*, which is most like the poppy, they make bread of it, baking it with fire. The root also of the *lotus* is eatable, easily becoming sweet, being round, and of the size of an apple. *M. Savary* mentions it as growing in the rivulets and on the sides of the lakes; and there are two sorts of varieties of the plant, the one with a white, the other with a bluish flower. ‘The calyx,’ he says, ‘blows like a large tulip, and diffuses a sweet smell, resembling that of the lily. The first sort produces a round root like that of a potatoe; and the inhabitants of the banks of the lake *Menzel* feed upon it. The rivulets in the environs of *Damietta* are covered with this majestic flower, which rises upwards of two feet above the water.’ The high veneration in which the nymphæa *lotus* was held by the Egyptians, is well known; and it is still equally venerated by the Hindoos. See **LOTUS**.

4. *N. lutea*, the yellow water lily, is a native of Britain, growing in lakes and ditches. *Linneus* tells us that the swine are fond of the leaves and roots, and that the smoke of it will drive away crickets and *blattæ*, or cock-roaches, out of houses.

5. *N. nelumbo*, is a native of the East and West Indies, called *nelumb* in Ceylon. The leaves which rest upon the surface of the water are smooth, undivided, perfectly round, thick, target-shaped, and about one foot and a half in diameter. The foot-stalk of the leaves is prickly; and inserted, not into the base, or margin, as in most plants, but in the centre of the lower disk or surface. From this centre, upon the upper

surface, issue, like rays, a great number of large ribs, or nerves, which, towards the circumference, are divided and subdivided into a small number of very minute parts. The flowers are large, flesh-colored, and consist of numerous petals, disposed, as in the other species of water-lily, in two or more rows. The seed-vessel is shaped like a top, being broad and circular above, narrow and almost pointed below. It is divided into several distinct cells, which form so many large round holes upon the surface of the fruit; each containing a single seed. The stalks, which are used as a pot herb, are of wonderful length. The root is very long, extends itself transversely, is of the thickness of a man's arm, jointed and fibrous, with long intervals betwixt the joints. The fibres surround the joints in verticilli or whirls.

NYMPHÆUM, in ancient geography, a sacred place near Apollonia, in Illyricum, sending forth continually fire in detached streams from a green valley and verdant meadows. *Plutarch*. Dio Cassius adds, that the fire neither burns up nor parches the earth, but that herbs and trees grow and thrive near it, and therefore the place is called *Nymphæum*; near which was an oracle. It was there that the sleeping satyr was caught, which is said to have been brought to Sylla as he returned from the Mithridatic war.

NYMPHIDIUS (Sabinus), a person of mean descent, but appointed by Nero colleague of Tigellinus in the command of the prætorian guards. About the time, however, that the German legions revolted from this despicable prince, he was also betrayed by Nymphidius, and abandoned by his guards. Nymphidius pretended to espouse the cause of Galba, but, after Nero's death, usurped the supreme authority. Galba, however, was again acknowledged and proclaimed, and Nymphidius, notwithstanding his artifices, detected and slain by the soldiers who were proclaiming Galba.

NYS. Corrupted of *ne is*. None is; not is. Obsolete.

Thou findest fault, where *nys* to be found,
And buildest strong work upon a weak ground.

Spenser.

NYSA, or **NYSSA**, in ancient geography, a town of Ethiopia, south of Egypt. Some place it in Arabia. This city, with another of the same name in India, was sacred to Bacchus, who was said to have been educated there by the nymphs of the place, and who received the name of Dionysius, from *Διός*, Jupiter, and *Νύσα*, the place of his education. Bacchus made this place the seat of his empire, and the capital of the conquered nations of the east.

NYSSA, in botany, a genus of the order *diœcia*, and polygamia class of plants; natural order twelfth, *holoracæ*: *HERM. CAT.* quinquepartite: *cor.* none: the stamina are five; there is one pistil; fruit a plum inferior: *MAL. CAT.* quinquepartite, no corolla, and ten stamina. There is only one species, viz.

N. aquatica, the tupelo tree. It is a deciduous tree or shrub, a native of moist or watery places in America, and consists of two varieties; the entire-leaved, and the serrated-leaved tupelo. The entire-leaved tupelo tree, in its native soil and climate, grows to nearly twenty feet high; in

this country its size varies according to the soil or situation. In a moist rich earth, well sheltered, it rises to nearly twenty feet; in others, that are less so, it makes slower progress, and is proportionally lower. The branches are not very numerous; and it rises with a regular trunk, at the top of which they generally grow. The leaves are of a lanceolated figure, and of a fine light-green color. They end in acute points, and are very ornamental, of a thickish consistence, soft, grow alternately on pretty long foot-stalks, and often retain their verdure late in the autumn. The flowers, which are not very ornamental, are produced from the sides of the branches, growing sometimes singly, sometimes many together, on a foot-stalk. They are of a greenish color; and, in the countries where they naturally grow, are succeeded by oval drupes, enclosing oval, acute, furrowed nuts. In England they seldom produce fruit.

The serrated-leaved tupelo tree grows usually nearly thirty feet in height; and divides into branches, near the top, like the other. The leaves are oblong, pointed, of a light-green color, and come out without order on long foot-stalks. The flowers come out from the wings of leaves on long foot-stalks. They are small, of a greenish color; and are succeeded by oval drupes containing sharp-pointed nuts, about the size of a French olive. The propagation of these trees is from seeds, which come from America. As soon as they arrive they should be sown in large pots of light sandy earth an inch deep. No plants come up the first spring. The gardener, after this work is done, should plunge his pots up to their rims in the ground; and, if it be a moist place, it will be the better. Weeding must be observed during the summer; and a few furze bushes should be pricked round the pots in November, which will prevent the ground from freezing, and forward the coming up of the seeds. In the next spring the pots should be plunged into a hot-bed, after which the seeds will soon appear. As much air as possible, and watering, should be afforded them; and they must be hardened soon to be set out. The pots should then be plunged to their rims again in the natural mould; where they are to remain till October. Watering must be given them; and they should also be shaded in the heat of the day. In October they must be housed with other green-house plants, or else set under a hot-bed frame, or some other cover, during winter. The third spring they should be taken out of the larger pots, and each planted in a smaller; in which their growth may be assisted by a gentle heat in a bed; and if they are planted up to the rims in a moist place, and shaded in dry weather, they will grow very well. Though by this time they should have become hardy, yet it will be proper to shelter them the winter following in bad weather. They require little more care during their stay in the pots, which may be either two, three, or more years, if they are large enough; when in spring they may be turned out, with the mould, into the places where they are to remain, which ought always to be moist and properly sheltered.

O.

O, as a letter, is the fourteenth in the alphabet, and the fourth vowel. In English, has a long sound; as in drone, groan, stone, alone, cloke, broke, coal, droll; or short, as in got, knot, shot, prong, long; the long sound is often denoted by a servile *a* or *u* subjoined; as in moan, soul; or by *e* at the end of a syllable; as in bone: when these vowels are not appended, it is generally short, except before *ll*; as, droll, scroll, and even then, sometimes, as in loll, poll. Its sound is often so soft as to require it double, and that chiefly in the middle of words; as, goose, reproof, &c. And in some words this *oo* is pronounced like *u* short; as in flood, blood, &c. In Irish O signifies a descendant, being abbreviated from og, ogha, young; it is also used as a possessive or equivalent to the English of, as in Clem o' Cleugh. O is also an interjection of wishing or exclamation. It is used with no great elegance by Shakspeare for a circle or oval.

Can this cockpit hold
The vasty field of France? or may we cram
Within this wooden O, the very casks
That did affright the air at Agincourt. *Shakspeare.*

O! by what name, for thou above all these,
Above mankind, or aught than mankind higher,
Surpasest far my naming, how may I
Adore thee, Author of this universe,
And all this good to man? *Milton.*

O unexpected stroke, worse than of death!
Must I thus leave thee, Paradise? thus leave
Thee, native soil, these happy walks and shades
Fit haunt of gods? *Id.*

O that we, who have resisted all the designs of his
love, would now try to defeat that of his anger!

Decay of Piety.
O! were he present, that his eyes and hands
Might see, and urge the death which he commands.
Dryden.

The Greeks had two O's; viz. omicron, *o*, and omega, *ω*; the first pronounced on the tip of the lips with a sharper sound; the second in the middle of the mouth, with a fuller sound, equal to *oo* in our language. As a numeral O was sometimes used for 11 among the ancients; and with a dash over it, thus Ō, for 11,000. In modern arithmetic it is used for the cypher, and represents nothing. (See ARITHMETIC.) As an abbreviation, in the notes of the ancients, O. CON. is read opus conductum; O. C. Q. opera consilique; O. D. M. opere donum munus; and O. LO. opus locatum. Among the Irish, the letter O, at the beginning of the name of a family, is said to be a character of dignity annexed to great houses. Thus, in the history of Ireland, we frequently meet with the O Neals, O Carrols, &c., considerable houses in that island. Camden observes that it is the custom of the lords of Ireland to prefix an O to their names, to distinguish them from the commonalty. In music, the ancients used O as a mark of triple time; from a notion that the ternary, or number three, was the most perfect of numbers, and therefore properly expressed by a circle, the most perfect of figures. It is not, strictly speaking, the letter O, but the

figure of a circle O, or double CO, used to express tempo perfecto, or triple time. Hence the Italians call it circolo. The seven antiphones, or alternate hymns of seven verses, &c., sung by the choir in the time of Advent, were formerly called O, from their beginning with such an exclamation.

OAF, *n. s.* This word is also written auff, ofe, and oph. Goth. *alf*; Teut. *auf*. It seems a corruption of ouph, a demon or fairy, says Dr. Johnson; in Germ. *aff*, from which elf; and means properly the same with changeling; a foolish child left by malevolent ouphs or fairies in the place of one more witty. A changeling a foolish child left by the fairies.

These, when a child haps to be got
Which after proves an idiot,
When folk perceives it thriveth not,
The fault therein to smother:
Some silly doating brainless calf,
That understands things by the half,
Says that the fairy left this oaf,
And took away the other.

Drayton's Nymphid.

OAK, *n. s.* Sax. *ac*, *œc*, 'signifying
OAK-APPLE, } strength,' Skinner says, 'to
OAK'EN, *adj.* } show how easy it is to play

OAKEN-PIN, *n. s.* the fool, under a show of literature and deep researches, I will, for the diversion of my reader, derive from *ouac*, a house; the oak being the best timber for building.' He seems to have had Junius in his thoughts, who on this word has shown his usual fondness for Greek etymology. 'Ac or oak,' says that critic, 'signified among the Saxons, like robur among the Latins, not only an oak but strength, and may be well enough derived, 'non incommode deduci potest,' from *αλη* strength; by taking the three first letters, and then sinking the *α*, as is not uncommon. The QUERCUS, which see: oaken is made of oak: oaken-pin, a kind of apple.

He returned with his brows bound with oak
Shakspeare.

He lay along
Under an oak, whose antique root peeps out
Upon the brook that brawls along this wood. *Id.*
No tree beareth so many bastard fruits as the oak:
for, besides the acorns, it beareth galls, oak apples,
oak nuts, which are inflammable, and oak berries,
sticking close to the body of the tree without stalk.

Bacon's Natural History.
No nation doth equal England for oaken timber
wherewith to build ships. *Bacon's Advice to Villiers.*

By lot from Jove I am the power,
Of this fair wood, and live in oaken bower. *Milton.*
The monarch oak, the patriarch of the trees,
Shoots rising up, and spreads by slow degrees:
Three centuries he grows, and three he stays
Supreme in state; and in three more decays.

Dryden.
Clad in white velvet all their troop they led,
With each an oaken chaplet on his head. *Id.*
An oak growing from a plant to a great tree, and
then lopped, is still the same oak. *Locke.*
Oaken pin, so called from its hardness, is a lasting
fruit, yields excellent liquor, and is near the nature
of the Westbury apple, though not in form.

Mortimer.

An *oaken* garland to be worn on festivals was the recompense of one who had covered a citizen in battle.

Addison.

A light, earthy, stony, and sparry matter incrustated and affixed to *oak* leaves.

Woodward on Fossils.

He snatched a good tough *oaken* cudgel, and began to brandish it.

Arbuthnot's John Bull.

Let India boast her plants, nor envy we

The weeping amber and the balmy tree,

While by our *oaks* the precious loads are born,

And realms commanded which those trees adorn.

Pope.

The *oak*-tree hath male flowers, or katkins, which consist of a great number of small slender threads. The embryos, which are produced at remote distances from these on the same tree, do afterwards become acorns, which are produced in hard scaly cups: the leaves are sinuated. The species are five.

Miller.

The fruit is an acorn like the common *oak*. The wood of this tree is accounted very good for many sorts of tools and utensils; and affords the most durable charcoal in the world.

Id.

It seems idolatry, with some excuse,

When our fore-father Druids in their *oaks*

Imagined sanctity.

Cowper

And such in ancient halls and mansions drear

May still be seen; but perforated sore,

And drilled in holes, the solid *oak* is found,

By worms voracious eating through and through.

Id.

OAK BARK, the bark of the oak, which is very useful in tanning. See **TANNING**. The bark of oak trees was formerly thought to be extremely useful in vegetation. One load (Mr. Mills in his Treatise on Husbandry informs us) of oak bark, laid in a heap and rotted, after the tanners have used it for dressing of leather, will do more service to stiffen cold land, and its effects will last longer, than two loads of the richest dung; but this has been strenuously controverted. The bark, in medicine, is also a strong astringent; and hence is recommended in hemorrhages, alvine fluxes, and other preternatural or immoderate secretions; and in these it is sometimes attended with good effects. Some have alleged that by the use of this bark every purpose can be answered which may be obtained from Peruvian bark. But, after several very fair trials, this is found not to be the case. Besides the bark, the buds, the acorns, and their cups are used; as also the galls, which are excrescences, caused by insects, on the oaks of the eastern countries, of which there are divers sorts; some perfectly round and smooth, some rougher with small protuberances, but all generally having a round hole in them. All the parts of the oak are styptic, binding, and useful in all kinds of fluxes and bleedings, either inward or outward. The bark is frequently used in gargarisms, for the relaxation of the uvula, and for sore mouths and throats: it is also used in restraining clysters and injections, against the prolapsus uteri or ani. The acorns, beaten to powder, are frequently taken by the vulgar for pains in the side.

OAK LEAF GALLS are of several kinds; the remarkable species, called the mushroom gall, is never found on any other vegetable substance but these leaves; and, besides this, there are a great number of other kinds. The double gall of these leaves is very singular, because the generality of productions of this kind affect only

one side of a leaf or branch, and grow all one way; whereas this kind of gall extends itself both ways, and is seen on each side of a leaf, in form of two protuberances, opposite the one to the other. These are of differently irregular shapes; but their natural figure seems that of two cones, with broad bases, and very obtuse points, though sometimes they are round, or very nearly so. These make their first appearance on the leaf in April, and remain on it till June or longer. They are at first green, but afterwards yellowish, and are softer to the touch than many other of the productions of this kind; they are usually about the size of a large pea; but sometimes they grow to the bigness of a nut. When opened, they are found to be of that kind which are inhabited each by one insect only, and each contains one cavity. The cavity in this is, however, larger than in any other gall of the size, or even in many others of three times the size; the sides of it being very little thicker than the substance of the leaf. It is not easy to ascertain the origin of the several species of flies which are at times seen in this manner to come out of the same species of galls. It seems the common course of nature that only one species of insect forms one kind of gall; yet it may be that two or three kinds may give origin to the same kind. There is, however, another occasion of our seeing different species come out of different galls of the same kind; and this is the effect of the enemies of the proper inhabitants. It might appear that the parent fly, when she had formed a gall for the habitation of her worm-offspring, had placed in an impregnable fortress: but this is not the case; for it frequently happens that a fly, as small perhaps as that which gave origin to the gall, produces a worm which is of the carnivorous kind, as the other feeds on vegetable juices. This little fly, well knowing that where there is one of these protuberances on a leaf there is a tender and defenceless insect within, pierces the sides of the gall, and deposits her egg within it. This, when it hatches into a worm, feeds upon the proper inhabitant; and, finally, after devouring it, passes into the chrysalis state, and thence appears in the form of its parent fly, and is seen making its way out of the gall, in the place of the proper inhabitant. On opening these leaf galls, which are properly the habitation only of one animal, it is common to find two, the stronger preying upon the body of the other, and sucking its juices as it does those of the leaf; often it is found wholly employed in devouring its unoffending neighbour at once: this is probably the case when its time of eating is nearly over; and, in fine, when we find the gall inhabited by only one insect, or containing only one chrysalis, as it ought in its natural state to do, we are never certain that this is the proper inhabitant, as it may be one of these destroyers who has eaten up the other, and supplied its place. See **APHIS** and **PUCERON**.

OAK LEAVES. The uses of oak bark in tanning and in hot-beds are generally known. For the latter of these purposes, however, oak-leaves are now found to answer equally well, or better. When raked into heaps, the leaves should immediately be carried into some place near the

hot-houses, where they may lie to couch. In this place they tread them well, and water them in case they happen to have been brought in dry. The heap is made six or seven feet thick, and covered over with old mats, or any thing else, to prevent the upper leaves from being blown away. In a few days the heap will come to a strong heat. It will be proper to let them remain five or six weeks in the heaps before they are again watered, and trodden down, in layers, till the pits are quite full. The whole is then covered with a tan bark, to the thickness of two inches, and well trodden down, till the surface becomes smooth and even. On this the pine-pots are to be placed in the manner they are to stand, beginning with the middle row first, and filling up the spaces between the pots with tan. In this manner we are to proceed to the next row, till the whole is finished; and this operation is performed in the same manner as when tan only is used. The leaves require no farther trouble through the whole season; as they will retain a constant and regular heat for twelve months without stirring or turning; and our author informs us, that, if he may judge from their appearance when taken out (being always entire and perfect), it is probable they would continue their heat through a second year; but, as an annual supply of leaves is easily obtained, the experiment is hardly worth making.

OAKA, or OAKAMUNDAT, a district of Gujerat, Hindostan, situated on the south side of the Gulf of Cutch, and separated by the swamp called the Run from the mainland. This swamp, which is from five to six miles broad, is during the spring tides covered by the sea to the height of one or two feet. The bottom is a firm sand, but covered with mud. The soil here is in general very poor, and produces little else than two species of coarse grain. The few inhabitants, however, breed a number of camels, but the occupation of the greater part is piracy. They are governed by various independent chiefs.

OAKA, the capital of the above district, was long celebrated as the nest of a gang of pirates, who recently received a severe chastisement from the British flag. The practice was, previous to undertaking a cruise, to visit the temple of their idol at Dwarca, and vow that, if they were successful, they would devote a certain portion of their plunder to the deity; by which means the Brahmins were so enriched that they are said to have had several ships of their own in this service. Long. 69° 36' E., lat. 22° 14' N.

OAKHAM. See OKEHAM.

OAKHAMPTON, a borough and market town of Devonshire, situate near the source of the small river Oak, twenty-one miles west from Exeter, and 195 west from London. The church is situate on a hill, and in the market place is an ancient chantry chapel. In the suburbs are the ruins of an ancient castle, dismantled by Henry VIII. on the attainer of Henry Courtenaye, marquis of Exeter. It has a small manufactory of serges. It is a very ancient borough, and is governed by a mayor, eight aldermen, eight common-council, town-clerk, &c., and sends two members to parliament; the mayor is chosen annually by the corporation, from among the

eight aldermen or principal burgesses. The market is on Saturday.

OAKUM, *n. s.* 'Formed by some corruption,' says Dr. Johnson: but there is a regular Saxon *oecumbe*, i. e. combings, refuse. Cords untwisted and reduced again to hemp, with which leaks are stopped.

They make their *oakum*, wherewith they calk the seams of the ships, of old seer and weather-beaten ropes, when they are over spent and grown so rotten as they serve for no other use but to make rotten *oakum*, which moulders and washes away with every sea as the ships labour, and are tossed. *Raleigh.*

Some drive old *oakum* through each seam and rift; Their left hand does the calking-iron guide, The rafter's mallet with the right they lift.

Dryden.

OANNES, a being in Chaldean mythology, represented as half a man and half a fish. According to Berosus and others, this monster was the civiliser of the Chaldeans; to whom he taught a system of jurisprudence so perfect as to be incapable of improvement. See MYTHOLOGY.

OAR', *n. s.*, *v. n.*, & *v. a.* } Sax. *ape*; Goth.

OAR'Y, *adj.* } and Swed. *ar*;

Teut. *opr*; Belg. *oar* (which also signifies the ear). Johnson with superabundant learning says, 'perhaps by allusion to the common expression of plowing the water, from the same root with ear to plow; Lat. *aro*;' as if any illiterate people would row thus far about to a word of such frequent use as this. Minshew suggests its more probable corruption from ROAR (Sax. *paþuan*), which see. The instrument of rowing; to row or impel by rowing: *oary* is having the form or use of an oar.

The *oars* were silver,
Which to the tune of flutes kept stroke, and made
The water, which they beat, to follow faster,
As amorous of their strokes.

Shakspeare. Antony and Cleopatra.

His bold head

'Bove the contentious waves he kept, and oared
Himself with his good arms in lusty strokes
To th' shore. *Id. Tempest.*

So towards a snip the oar-fanned gallies play,
Which wanting sea to ride, or wind to fly,
Stands but to fall revenged. *Denham's Poems.*

Its progressive motion may be effected by the help
of several *oars*, which in the outward ends of them
shall be like the fins of a fish to contract and dilate.

Wilkins.

The swan with arched neck,
Between her white wings mantling, proudly rows
Her state with *oary* feet. *Milton.*

In shipping such as this, the Irish kern
And unt taught Indian, on the stream did glide,
E'er sharp-keeled boats to stem the flood did learn,
Or fin-like *oars* did spread from either side.

Dryden.

His hair transforms to down, his fingers meet
In skinny films, and shape his *oary* feet. *Addison.*
He more undaunted on the ruin rode,
And oared with labouring arms along the flood.

Pope.

Dr. Johnson sat high on the stern like a magnificent Triton. The boatman and Mr. M'Queen chorussed, and all went well. At length Malcolm himself took an *oar*, and rowed vigorously.

Bowell's Tour to the Hebrides.

OAR. That part of the oar which is out of the vessel and which enters the water, is called

the blade; and that which is within board is termed the loom, whose extremity, being small enough to be grasped by the rowers or persons managing the oars, is called the handle. To push the boat or vessel forwards, by means of this instrument, the rowers turn their backs forward, and, dipping the blade of the oar in the water, pull the handle forward, so that the blade at the same time may move aft in the water: but, since the blade cannot be so moved without striking the water, this impulsion is the same as if the water were to strike the blade from the stern towards the head: the vessel is therefore necessarily moved according to this direction. Hence it follows, that she will advance with the greater rapidity, by as much as the oar strikes the water more forcibly. Thus it is evident that an oar acts upon the side of a boat or vessel like a lever of the second class, whose fulcrum is the station upon which the oar rests on the boat's gunnel. In large vessels, this station is usually called the row-port; but in lighters and boats it is always termed the row-lock.

OARISTUS, or **OARISTYS**, a term in the Greek poetry, signifying a dialogue between a husband and his wife; such as that in the sixth book of the Iliad, between Hector and Andromache. Scaliger observes that the oaristus is not properly any particular little poem, or entire piece of poetry, but always a part of a great one. He adds that the passage now cited in Homer is the only proper oaristus extant in the ancient poets.

OASIS, the name of three districts of Egypt, so called from their fertility; the word oasis signifying 'a fertile spot in a sandy desert.' They produce barley, maize, dates, &c.

OAST, *n. s.* Belg. *ast*. A kiln. Not in use.

Empty the bin into a hog-bag, and carry them immediately to the *oast* or kiln to be dried.

Mortimer.

OAT, *n. s.* } Sax. *ate*, *aten*; from Goth.
OATCAKE, *n. s.* } *at*, *elte*, food. A grain largely
OATEN, *adj.* } used as food, both by men and
OAT-MALT, *n. s.* } horses: the plural, oats, is the
OAT-MEAL. } word more commonly used:
 eaten is made of, or bearing oats: the compounds
 explain themselves.

When shepherds pipe on *oaten* straws,
 And merry larks are ploughmen's clocks.

Shakespeare.

The *oats* have eaten the horses.

Id.

Take a blue stone they make haver or *oatcakes*
 upon, and lay it upon the cross bars of iron.

Peacham.

It is bare mechanism, no otherwise produced than
 the turning of a wild *oatboard*, by the insinuation of
 the particles of moisture.

Locke.

For your lean cattle, fodder them with barley
 straw first, and the *oat-straw* last.

Mortimer's Husbandry.

In Kent they brew with one-half *oatmeal*, and the
 other half barley-malt.

Mortimer.

Our neighbours tell me oft, in joking talk,
 Of ashes, leather, *oatmeal*, bran, and chalk.

Gay.

Oatmeal and butter, outwardly applied, dry the
 scab on the head.

Arruthnot on Ailments.

His horse's allowance of *oats* and beans was
 greater than the journey required.

Swift.

The *oat* is of the grass-leaved tribe; the flowers have
 no petals, and are disposed in a loose panicle: the

grain is eatable. The meal makes tolerable good
 bread.

Miller.

At breakfast this morning, among a profusion of
 other things, there were *oat-cakes*, made of what is
 called graddaned meal, that is, meal made of grain sepa-
 rated from the husks, and toasted by the fire, instead
 of being threshed and kiln dried.

Boswell's Tour.

His diet was of wheaten bread

And milk, and *oats*, and straw;

Thistles, or lettuces instead,

With sand to scour his maw.

Cowper.

The Friesland or Dutch *oat* affords more straw,
 and is thinner skinned than the above kind. The
 grains are mostly double, the larger one sometimes
 awned, with the awn placed high. It is not so much
 sown as formerly. The Siberian or Tartarian *oat*,
 &c., is considered by Mr. Marshall as a distinct spe-
 cies.

Dr. A. Rees.

OATES (Titus), a celebrated and infamous
 partizan, was born about 1619, and was the son
 of a Baptist preacher. He was educated at Mer-
 chant Tailor's school, whence he removed to Cam-
 bridge; took orders; and, according to Hume,
 became a chaplain on board the fleet, whence
 he was dismissed for unnatural practices. In
 1677 he turned Roman Catholic and Jesuit, to
 obtain, as he boasted, a knowledge of their se-
 crets with a view to betraying them; but subse-
 quently declared himself a Protestant, and, in
 conjunction with one Dr. Tongue, gave infor-
 mation of a pretended plot, for the destruction
 of the Protestant religion, and falsely accused the
 Catholic lords Petre, Powis, Bellasis, Arundel
 of Wardour, and other persons of quality, several
 of whom, including lord Stafford, were executed
 for the alleged conspiracy. Such was the cele-
 brated popish plot, and such the credulity of the
 times, that this unworthy character was rewarded
 with a pension of £1200 per annum, and lodged
 for safety at Whitehall palace. On the accession
 of James II., however, he was indicted and con-
 victed of perjury, and sentenced to stand in the
 pillory five times a year during his life, and to
 be whipped from Aldgate to Newgate, and
 thence to Tyburn. Though the whipping was
 severely inflicted, he recovered, and, at the Re-
 volution, the tide of popular prejudice again
 turning in his favor, he was rewarded with a
 pension of £1000 per annum. In 1698 he en-
 deavoured to rejoin the Baptists; but in the
 course of a few months was expelled as a hypo-
 crite. He died in 1705, universally execrated.

OATH, *n. s.*

Sax. *að*; Goth. *aith*;

OATHABLE, *adj.*

Belg. *ced*: as Mr.

OATHBREAKING, *n. s.* } Thomson suggests

from Sax. *de*, Goth. and Swed. *e*, law or justice.
 A solemn attestation of any kind: particularly
 one calling the Divine Being to witness or attest
 its truth: oath able is capable of taking an oath
 (obsolete): oathbreaking, perjury.

For men sweren bi a gretter than himsilf, and the
 ende of al her ple is an *oath* to confirmacyoun.

Wiclif. Ebrewis 6.

Read over Julia's heart, thy first best love,
 For whose dear sake thou then did'st rend thy faith
 Into a thousand *oaths*; and all those *oaths*
 Descended into perjury to love me.

Shakespeare.

You're not *oathable*,

Although I know you'll swear

Into strong shudders the immortal gods

Id.

His oathbreaking he mended thus,

By now forswearing that he is forsworn. *Id.*

We have consultations which inventions shall be published, which not: and take an *oath* of secrecy for the concealing of those which we think fit to keep secret. *Bacon.*

All the *oath*-rites said,
I then ascended her adorned bed.

Chapman.

Profit or pleasure there is none in swearing, nor any thing in men's natural tempers to incite them to it. For, though some men pour out *oaths* so freely as if they came naturally from them, yet surely no man is born of a swearing constitution. *Tillotson.*

Those called to any office of trust are bound by an *oath* to the faithful discharge of it: but an *oath* is an appeal to God, and therefore can have no influence, except upon those who believe that he is.

Swift.

Oaths terminate as Paul observes, all strife,
Some men have surely then a peaceful life;
Whatever subject occupy discourse,
The feats of Vestris, or the naval force,
Asseveration blustering in your face
Makes contradiction such a hopeless case;
In every tale they tell, or false or true,
Well known, or such as no man ever knew,
They fix attention, heedless of your pain,
With *oaths* like rivets forced upon the brain.

Cowper.

An *OATH* is an invocation of God to witness the truth of what we say, accompanied by an implied and sometimes expressed imprecation of his vengeance, or a renunciation of his favor, if what we affirm be false, or what we promise be not performed. The laws of all civilised states have required the security of an *oath* for evidence given in a court of justice; and the Christian religion, while it utterly prohibits profane and needless swearing, does not seem to forbid *oaths* duly required, or taken on necessary occasions.

The Quakers and Moravians, swayed by the sense which they put upon that text of Scripture (Matth. v. 34), 'swear not at all;' and St. James's words, chap. v. 12, refuse to swear upon any occasion, even at the requisition of a magistrate, and in a court of justice. These scruples appear to proceed from not distinguishing between the proper use and abuse of swearing. It is doubtless impious to call upon God to witness trifles, or to use his tremendous name as a mere expletive in conversation; but it does not follow that we may not solemnly call upon him to witness truths of importance. If it be lawful to ask of God our daily bread, and other earthly blessings, it cannot surely be unlawful, where the lives or properties of our neighbours, or the security of government is concerned, to invoke him with reverence to witness the truth of our assertions, or the sincerity of our intentions; because of our truth and sincerity, in doubtful cases, none but he can be the witness.

In the Old Testament we find frequent mention made of *oaths* taken and imposed:—Gen. xxiv. Abraham made Eliezer, his steward, swear by the Lord, the God of heaven and earth.—Gen. xxvi. Abimelech, king of Gerar, and Isaac, took an *oath* of each other.—Gen. l. Joseph made his brethren swear.—Exod. xxii. An *oath* was ordered by God to be imposed on one who

should lose cattle committed to his care.—1 Sam. xiv. Saul imposed an *oath* on his subjects.

In the New Testament we are told that 'an *oath* for confirmation is an end of all strife.'—Heb. vi. 16. Our blessed Saviour himself, who came not to destroy the law, but to fulfil it, 'submitted to be put on his *oath* by Caiaphas, the Jewish high priest, before which adjuration he held his peace.'—Matt. xxvi. 63. St. Paul uses language which, without controversy, must be held to be equivalent with the most solemn *oath*. 'I call God for a record upon my soul.'—2 Cor. i. 23.

The swearing which we think lawful is—1. When the occasion is important; 2. When the necessity is urgent; 3. When the truth is not attainable without it, the matter being involved in obscurity; 4. When the evidence is contradictory; or, 5. When any evil would arise from the neglect, or good from the use, of it—as the escape of the guilty and the punishment of the innocent; or the punishment of the bad, and the acquittal of the innocent.

The *oaths* which we consider to be prohibited are—1. Vain or useless; 2. Frequent or customary; 3. Profane or idolatrous; 4. Rash or heedless; 5. False or deceitful; nor do we allow it to be proper to swear at all, by any other person, place, thing, time, or object than God only. And hence we understand our Saviour and his apostle James not as absolutely forbidding all swearing, but all swearing by heaven or earth, sun or moon, life or limb, man or angel, or other animate or inanimate thing, in those often quoted, but often misunderstood passages, Matt. v. 34; James v. 12. As the original Greek was without stops, the above passages might with equal, if not greater propriety, have been rendered, 'Swear not at all by heaven,' &c.; or 'Swear not at all, either by heaven,' &c.; or, perhaps, still better, 'Neither swear not at all by heaven,' &c. That this was the sense of the reformers, and the compilers of our Common Prayer Book, may be seen in 'The Fathers of the English Church,' *passim*; and in the thirty-ninth article of our church:—'As we confess that vain and rash swearing is forbidden Christian men, by our Lord Jesus Christ, and James his apostle, so we judge that (the) Christian religion doth not prohibit, but a man may swear when the magistrate requireth, in a cause of faith and charity, so it be done according to the prophet's (Jeremiah iv. 2) teaching, in justice, judgment, and truth.'

They who defend the lawfulness of *oaths* say, 1. *Oaths were permitted under the law, which Christ came not to destroy but to fulfil.* The Friends reply, so were arbitrary divorce, hatred of enemies, retaliation, &c.; the same discourse which forbade these forbade swearing also, and in terms at least equally explicit. Swear not at all (ὅλως, omnino, altogether). In this first gospel sermon, the axe (as had been predicted) was laid at the root of the tree of evil; anger was forbidden, as the root of murder; unlawful desire, as that of adultery; and so swearing, as the root of perjury. 'Christ,' says Basil, 'cuts off the opportunity of perjury.'

2. *Our Lord and the apostle Paul swore.*—The Friends reply, When our blessed Redeemer was brought before the sanhedrim, the high priest said,

'I adjure thee by the living God,' &c.; to which Jesus replied, 'Thou hast said.' If this was an oath, it was evidently all on the part of Caiaphas, our Lord had no agency in it. But for three reasons we do not consider it one. 1st, *Ἐπεμύνη*, though translated 'adjure,' means rather to solemnly exhort and enjoin, as Schleusner himself allows. 2nd, If the high priest had wished to put our Saviour on his oath, it would doubtless have been done in the ordinary form. But, 3rd, It is not likely that he was sworn at all. He was not attending the court as a witness, neither was there any fact to which he was called upon to depose. He was accused of having assumed the divine character; the evidence was suspicious and unsatisfactory, and it was evidently for the purpose of entrapping him into the repetition of his supposed crime, that the high priest solemnly enjoined him to declare whether he was or was not the Son of God.

With respect to the apostle Paul, no expression, they continue, can be extracted from his writings which would be admitted for an oath in any court of judicature. Similar protestations were frequently made by primitive Friends, but unavailingly, and the affirmation granted them by law used to contain the words 'in the presence of Almighty God.' Besides, this argument would prove, if it proved any thing, too much, for the advocates of oaths generally, allow that only juridical swearing is admitted by the law of Christ, which Paul must have transgressed in his oaths, as they were made in epistles to his friends.

3. The third argument in defence of oaths is that Matthew v. 33—37, and James v. 12, may be translated 'Swear not at all, either by heaven,' &c., not including 'by Jehovah.' This interpretation, reply the Friends, though philologically almost groundless, we will grant; but while these words remain, 'or by any other oath,' of what service can it be? It is very strange that any one should fail to perceive that these oaths (by heaven, by earth, &c., and specified because most common) were forbidden for this very reason, that even they, virtually and in fact, were oaths by Jehovah himself. This reason is most explicitly given by our Lord, 'Swear not at all; neither by heaven, for it is God's throne; nor by the earth, for it is his footstool; neither by Jerusalem, for it is the city of the Great King, &c.' 'Whoso shall swear by the temple, sweareth by it and by Him that dwelleth therein; and he that shall swear by heaven, sweareth by the throne of God and by Him that sitteth thereon; so that swearing by heaven and by God is the same thing. If then one is unlawful, the other must be so also. And, if swearing by any thing created was forbidden simply because of its virtual connexion with swearing by the Creator, how much more offensive to that Great Being must be the oath by his own awful name! The Friends observe further, and in conclusion, that for nearly 300 years after Christ, oaths were considered contrary to his command.

They also quote from Tertullian, 'swearing itself is unlawful to Christians,' and from Chrysostom, 'Let the Christian entirely avoid oaths, in obedience to our Lord's prohibition.' Vide *Gurney on the Peculiarities of Friends.*

OATS, in botany. See *AVENA*.

OAXACA, or GUAXACA, a fertile and beautiful intendency of Mexico, bounded on the north by Vera Cruz, on the east by Guatemala, on the west by the province of Puebla, and on the south, for eleven leagues, by the Pacific Ocean. The air is fine, and the vegetation so beautiful and vigorous that it produces more mulberry trees and more silk than any province in America; together with wheat, cattle, sugar, cotton, honey, cocoa, and plantains. In the temperate region the rivers are very copious from the month of May to the month of October. Yet, except the valley of Guaxaca, the greatest part of the country is mountainous. It has rich mines of gold, silver, and lead; and all its rivers have gold in their sands. Cassava, cochineal, crystal, and copperas, abound in this province; as also vanilla, a drug used to give chocolate a flavor. In 1803 the inhabitants amounted to 534,000; the extent of surface in the province is 4447 square leagues.

OAXACA, the capital of the last mentioned province, and a bishop's see, lies 230 miles south of the city of Mexico, in a delightful valley of this name. It is watered by a beautiful river, and on the north several aqueducts bring pure and abundant waters from the mountains. The climate presents a perpetual spring. The town is an oblong square, nearly two miles by one and a quarter, including the suburbs, which are full of gardens and plantations of cochineal. The streets are wide and well paved; and the houses, generally but of two floors, are of freestone. The modern town-house in the great square is built with a sea-green stone. The bishop's house and the cathedral form two sides of the same square, which is surrounded with arcades. The churches and monasteries, which are numerous, are all solidly built, and handsomely decorated. From the enumeration made in 1792, it appears that the inhabitants amount to 24,000. Oaxaca is greatly subject to earthquakes.

OBADIAH, Heb. *עבדי* and *יח*, i. e. the servant of the Lord, a valiant man of David's army, who came to join him in the wilderness, with several others of the tribe of Gad, 1 Chron. xii. 9.

OBADIAH, the prophet, is believed to have been the same with the governor of Ahab's house, mentioned in the first book of Kings (xviii. 3, &c.), who hid and fed the hundred prophets whom Jezebel would have destroyed; and some say that he was that Obadiah whom Josiah made overseer of the works of the temple (2 Chron. xxxiv. 12.) The truth is, that when he lived or prophesied is very uncertain: though most writers make him contemporary with Hosea, Amos, and Joel.

OBADIAH, THE PROPHECY OF, a canonical book of the Old Testament, which is contained in one single chapter; and is partly an invective against the cruelty of the Edomites, who mocked and derided the children of Israel as they passed into captivity; and with other enemies, their confederates, invaded and oppressed those strangers, and divided the spoil among themselves; and partly a prediction of the deliverance of Israel, and of

the victory and triumph of the whole church over her enemies.

OBDORE, a name formerly given to that part of Asiatic Russia which extends along the mountainous northern part of the course of the Obi, to the Frozen Ocean. The soil is here destitute of wood, and covered only here and there with a few shrubs. Every attempt to introduce plants, vegetables, or domestic animals, has failed: a horse seldom lives more than one year, and a cow not more than five; here rein deer form, therefore, the only resource of the country. The summer, however, is agreeable.—This is also the name of a small palisadoed fort, the most northerly of any maintained by Russia, garrisoned by twenty-five cossacks and an officer, who forms a species of sovereign to the tribes of Ostiaks and Samoyedes. The town consists only of a church and five houses, with a number of huts, which serve as magazines for furs collected as a tribute. Lat. 67° N.

OBDUCE, *v. a.* } Lat. *obduco*. To draw over
OBDUCTION, *n. s.* } as a covering.

No animal exhibits its face in the native colour of its skin but man; all others are covered with feathers, hair, or a cortex that is *obduced* over the cutis.

Hale.

OB'DURATE, *adj.* } Lat. *obduratus*. Hard
OB'DURACY, *n. s.* } in heart; obstinate;
OB'DURATELY, *adv.* } impenitent; stub-
OB'DURATENESS, *n. s.* } born; firm: obduracy
OB'DURATION, *n.* } is inflexibility; impenitence; state of being
OB'DURATED, *adj.* } firm in evil. All the other derivatives follow these senses.

Sometimes the very custom of evil makes the heart *obdurate* against whatsoever instructions to the contrary.

Hooker.

What occasion it had given them to think, to their greater *obduration* in evil, that, through a froward and wanton desire of innovation, we did constrainedly those things for which conscience was pretended?

Id.

Thou think'st me as far in the Devil's book, as thou and Falstaff, for *obduracy* and persistency.

Shakespeare. Henry IV.

If when you make your prayers, God should be so *obdurate* as yourselves, How would it fare with your departed souls?

Shakespeare.

Women are soft, mild, pitiful, and flexible; Thou stern, *obdurate*, flinty, rough, remorseless.

Id.

To what a height of *obduration* will sin lead a man, and, of all sins, incredulity.

Bp. Hall.

I confess finding the *obduredness* of that man, I bent my prayers against him, beseeching God daily that he would be pleased to remove, by some means or other, that apparent hinderance to my faithful labours.

Id.

This barren season is always the reward of obstinate *obduration*.

Hammond.

To convince the proud what sins avail, Or wonders move the *obdurate* to relent; They hardened more, by what might more reclaim.

Id.

This saw his hapless foes, but stood *obdured*, And to rebellious fight rallied their powers Insensate.

Id. Paradise Lost.

God may, by a mighty grace, hinder the absolute completion of sin in final *obduracy*.

South.

No such thought ever strikes his marble, *obdurate* heart, but it presently flies off and rebounds from it. It is impossible for a man to be thorough paced in ingratitude, till he has shook off all fetters of pity and compassion.

South.

Obdurate as you are, oh! hear at least

My dying prayers, and grant my last request.

Dryden.

They joined the most *obdurate* consonants without one intervening vowel.

Swift.

And if he doom that people with a frown.

And mark them with a seal of wrath pressed down, *Obduracy* takes place; callous and tough,

The reprobated race grows judgment-proof. *Courper.*

OBE'DIENCE, *n. s.* } Fr. *obedience*; Lat.

OBE'DIENT, *adj.* } *obedientia*. Conform-

OBE'DIENTIAL, *adj.* } ity to command; sub-

OBE'DIENTLY, *adv.* } mission to authority;

OBEY, *v. a.* } hence obsequiousness:

obedient and obdiential mean, compliance with command or authority; submissive; obsequious: to obey is, actively or passively to comply with commands; conform to the requirements of authority. It formerly took *to* before the person obeyed, which Addison has mentioned as one of Milton's Latinisms; but it is frequent, as Dr. Johnson observes, in old writers: when we borrowed the French word we borrowed the syntax, *obeir au roi*!

His servants ye are to whom ye *obey*, whether of sin unto death, or of *obedience* unto righteousness.

Rom. iv. 16.

To this end did I write, that I might know the proof of you, whether ye be *obedient* in all things.

2 Cor. ii. 9.

He commanded the trumpets to sound, to which the two brave knights *obeying*, they performed their courses, breaking their staves.

Sidney.

The fit bark, *obeying* to her mind,

Forth launched quickly, as she did desire.

Spenser.

If you violently proceed against him, it would shake in pieces the heart of his *obedience*.

Shakespeare.

The will of Heaven

Be done in this and all things! I *obey*. *Id.*

To this her mother's plot

She, seemingly *obedient*, likewise hath

Made promise. *Id. Merry Wives of Windsor.*

It was both a strange commission, and a strange *obedience* to a commission, for men so furiously assailed to hold their hands.

Bacon.

The ancient Britons yet a sceptred king *obeyed*.

Dryden.

We must beg the grace and assistance of God's spirit to enable us to forsake our sins; and to walk in *obedience* to him.

Duty of Man.

Never any man lost by his *obedience* to the Highest.

Bp. Hall.

Faith is such as God will accept of, when it affords fiducial reliance on the promises, and *obediential* submission to the command.

Hammond.

In vain thou bid'st me to forbear,

Obedience were rebellion here.

Cowley.

Nor did they not perceive the evil plight

In which they were, or the fierce pains not feel,

Yet to their general's voice they soon *obeyed*.

Milton.

Nor can this be,

But by fulfilling that which thou didst want,

Obedience to the law of God, imposed

On penalty of death.

Id. Paradise Lost.

Religion hath a good influence upon the people,
to make them obedient to government, and peaceable
one towards another.

Tillotson.

We should behave ourselves reverently and obediently
towards the Divine Majesty, and justly and charitably
towards men.

Id.

Africa and India shall his power obey,
He shall extend his propagated way
Beyond the solar year, without the starry way.

Dryden.

Faith is then perfect, when it produces in us a
fiducial assent to whatever the gospel has revealed,
and an obediential submission to the commands.

Wake's Preparation for Death.

The chief his orders gives; the obedient band,
With due observance, wait the chief's command.

Pope.

The obedience of men is to imitate the obedience of
angels, and rational beings on earth are to live unto
God as rational beings in heaven live unto him.

Law.

The stout tall captain, whose superior size
The minor heroes view with envious eyes,
Becomes their pattern upon whom they fix
Their whole attention, and ape all his tricks;
His pride, that scorns to obey or to submit,
With them is courage, his effrontery wit.

Cowper.

OBELIRNE (Thomas Lewis), D. D., a learned
prelate of the established church, and a native of
the county of Longford, in Ireland, was born in
1748 of a Catholic family, by whom he was sent
to St. Omers at an early age, with his brother
John, to study for the priesthood. John in due
course took orders and became a Catholic priest
in the diocese of which his brother was afterwards
the Protestant bishop. Thomas, on the contrary,
renounced the Catholic creed, and at the
commencement of the American war, having
taken orders, accompanied lord Howe as chaplain
of the fleet. On his return to England he
published a vindication of his patron, whose
conduct was at that time a subject of parliamentary
enquiry; and his connexion with that noble
family introduced him to the duke of Portland.
In 1782 he accompanied the duke to Ireland, as
private secretary, and obtained, the following
year, from his grace, two valuable livings in Northumberland
and Cumberland. He afterwards
was first chaplain to earl Fitzwilliam, and was
promoted to the see of Ossory, from which, on
the death of Dr. Maxwell, he was translated to
that of Meath. The writings of this popular prelate
were, *The Crucifixion*, a poem, in 4to. 1776;
The Generous Impostor, a comedy, 1780; *A Short History of the last Session of Parliament*,
8vo., anonymous; *Considerations on the late Disturbances*,
by a Consistent Whig, 8vo.; *Considerations on the Principles of Naval Discipline and Courts-Martial*,
8vo., 1781; and several sermons and charges. He died February 15th, 1823.

OBESANCE, *n. s.* *Fr. obeissance.* A bow; a courtsey; an act of reverence.

Bathsheba bowed, and did obeissance unto the king.

1 Kings i. 16.

Bartholomew my page,
See drest in all suits like a lady;
Then call him Madam, do him all obeissance.

Shakspeare.

The lords and ladies paid
Their homage, with a low obeissance made;
And seemed to venerate the sacred shade.

Dryden.

OBELISK, *n. s.* *Lat. obeliscus; Gr. οβελος.*
A pyramidal piece or pillar of marble, or other
fine stone, having usually four faces.

He published the translation of the Septuagint,
having compared it with the Hebrew, and noted by
asterisks what was defective, and by obelisks what
redundant.

Grew.

Between the statues obelisks were placed,
And the learned walls with hieroglyphicks graced.

Pope.

An OBELISK, in architecture, is a truncated
quadrangular, and slender pyramid, raised as an
ornament, and frequently charged either with inscriptions
or hieroglyphics. Obelisks appear to be of very great antiquity,
and to have been first raised to transmit to posterity precepts of philosophy,
which were cut in hieroglyphical characters; afterwards they were used to immortalise
the great actions of heroes, and the memory of persons beloved.
The first obelisk mentioned in history was that of Ramases king of Egypt,
in the time of the Trojan war, which was forty cubits high.
Phius, another king of Egypt, raised one of fifty-five cubits;
and Ptolemy Philadelphus another of eighty-eight cubits, in memory of Arsinoe.
Augustus erected one at Rome in the Campus Martius, which served to mark the hours on an horizontal dial drawn on the pavement.
They were called by the Egyptian priests the fingers of the sun, because they were made in Egypt also to serve as styles or gnomons to mark the hours on the ground.
The Arabs still call them Pharaoh's needles; whence the Italians call them *aguglia*, and the French *aiguilles*.
One of the most common and frequent situations in which obelisks were erected was the space before a temple.
Diodorus makes mention of two obelisks of Sesostris placed before a Theban temple, which were 120 cubits high.
Herodotus mentions two others, 100 cubits high, one of which was erected before a temple at Sais, and the other before the temple of the sun at Heliopolis.

The Romans, in the plenitude of their power and splendor, removed many of these relics of times, then ancient, from their original situations into Italy.
When that majestic empire was overrun by the barbarians most of these noble monuments were thrown down, defaced, or demolished.
The exhumations made by the decree of pope Sextus V. brought to light four of them, which were repaired by his architect, Fontana.
Since that period several others have been dug up. Several obelisks have likewise been preserved at Constantinople, the most celebrated of which stood in that part of the hippodrome denominated *Media Spina*.
On the four sides of the base of this noble monument were sculptured a variety of subjects: the bassi-relievi of the northern side have been published by Spon.
At Catania, in Sicily, fragments have been discovered of two Egyptian obelisks, most probably conveyed thither by the Romans.
One has been set up again, presenting a curious appearance from its having eight faces. On the north side of Penrith, in the church-yard, are two square obelisks, of a single stone each, eleven or twelve feet high, about twelve inches diameter, and twelve by eight at the sides; the highest about eighteen

suches diameter, with something like a transverse piece to each, and mortised into a round base. They are fourteen feet asunder, and between them is a grave enclosed between four semicircular stones of the unequal lengths of five, six, four and a half, and two feet high, having on the out-sides rude carving, and the tops notched. This is called the Giant's grave, and ascribed to Sir Ewan Cesarius, who is said to have been as tall as one of the columns, and capable of stretching his arms from one to the other.

OBERLAND, a district of Switzerland, forming the south-east part of the canton of Bern. In the north is a lofty mountain; but the district contains large valleys and plains, which are fertile in fruit and corn. Towards the south it becomes more and more hilly, and terminates in the highest region of the Alps.

OBERLIN (Jer. James), a learned German philosopher and metaphysician, was born at Strasburgh in 1735. He studied at his native place, where in 1757 he published his *Dissertatio Philologica de veterum ritu condiendi Mortuos*. After this he contributed assistance to Dr. Ken- nicot, by collating for him four MSS. in the Strasburgh library. In 1763 he was appointed librarian to the university, and in 1770 became professor of Latin eloquence. In 1782 he obtained the chair of logic and metaphysics. He died in 1806. His other works are—1. *Rituum Romanorum primæ Linæ, orbis antiqui, Artis Diplomatiæ, &c.*; 2. *Jungendorum Marium Fluminumque Omnis ævi Molimina*; 3. *De Latine Lingue Medii ævi mira Barbaria*; 4. *Essai sur le patois Lorrain*; 5. *Glossarium Germanicum Medii ævi, Potissimum Dialecti Suevicæ*; 6. *The Strasburgh Almanac*; 7. *Editions of Horace, Tacitus, Cæsar, &c.*; 8. *Life of Guttenberg, &c.*

OBESENESS, *n. s.* } *Lat. obesus. Morbid*
OBESITY. } *fatness; incumbrance*
of flesh.

On these many diseases depend; as, on the strait-ness of the chest, a phthisis; on the largeness of the veins, an atrophy; on their smallness, *obesity*.

Grew's Cosmol.

OBI, a considerable river of Asiatic Russia, traversing the whole government of Tobolsk. It is said to rise in 52° N. lat. on the south side of the Altai Mountains, from the lake Altyn Noor. Here it is called By, but formerly received the name of the Great River, as being the largest which flows through Asiatic Russia. It takes the name of Obi after its junction with the Katoune: after receiving the Irtysh, it becomes very broad: but it divides into branches, which again re-unite and form numerous isles. This river has an entire course of upwards of 2000 miles, and every where abounds in fish.

OBIAN, a river of the United States, in Tennessee, which runs into the Mississippi, long. 90° 8' W., lat. 35° 48' N.

OBIIDOS, a town in the central part of Portugal, near the coast on the small river Lagoa de Obidos. On an adjoining hill are the ruins of a castle. An action took place here between the British advanced guard and a party of French, on 15th August, 1808, shortly before the battle of Vimeira. Inhabitants 3000. Forty-four miles north of Lisbon.

OBJECT, *n. s. & v. a.*
OBJECT-GLASS, *n. s.*
OBJECTION,
OBJECTIVE, *adj.*
OBJECTIVELY, *adv.*
OBJECTIVENESS, *n. s.*
OBJECTOR.

Fr. objet; Lat. objectum, i. e. ob and jacio, to cast against. That against or toward which the sight is cast, or any power or faculty

employed; hence any thing presented to the senses; any thing influenced by another thing: to object is, therefore, to oppose; propose as a change; taking to or against after it: objection, the act of presenting any thing opposed; charge made; adverse argument or fault found: objective is belonging to, residing in, or made an object: objectively, in the manner or state of an object: objectiveness, the state of being an object: objector, he who offers or sustains objections.

Were it not some kind of blemish to be like unto Infidels and Heathens, it would not so usually be objected; men would not think it any advantage in the cause of religion to be able therewith justly to charge their adversaries.

Hooker.

The book requireth due examination, and giveth liberty to object any crime against such as are to be ordered.

Whitgifts.

Dishonour not your eye
By throwing it on any other object.

Shakspeare.

Pardon
The flat unraised spirit, that hath dared,
On this unworthy scaffold, to bring forth
So great an object. *Id. Henry V*

Speak on, Sir,
I dare your worst objections.

Id. Henry VIII.

Men in all deliberations find ease to be of the negative side, and affect a credit to object and foretell difficulties; for when propositions are denied, there is an end of them; but if they be allowed, it requireth a new work; which false point of wisdom is the bane of business.

Bacon.

Flowers growing scattered in divers beds, will show more so as that they be object to view at once.

Id.

There is ever between all estates a secret war. I know well this speech is the objection and not the decision; and that it is after refuted.

Id.

They are her farthest reaching instrument,
Yet they no beams unto their objects send;
But all the rays are from their objects sent,
And in the eyes with pointed angles end.

Davies.

I find our weak powers are subject to an unavoidable lassitude; and we can no more contemplate always those divine objects than our bodily eyes are able to fix themselves on the body of the sun in his brightest splendour.

Bp. Hall.

The object of true faith is, either God himself, or the word of God: God who is believed in, and the word of God as the rule of faith, or matter to be believed.

Hammond.

The old truth was, object ingratitude, and ye object all crimes: and is it not as old a truth, is it not a higher truth, object rebellion, and ye object all crimes?

Holiday.

Why else this double object in our sight,
Of sight pursued in the air, and o'er the ground?

Milton.

If this one small piece of nature still affords new matter for our discovery, when should we be able to search out the vast treasures of objective knowledge that lie within the compass of the universe?

Hale's Origin of Mankind.

Is there such a motion of *objectiveness* of external bodies, which produceth light? The faculty of light is fitted to receive that impression or *objectiveness*, and that *objectiveness* fitted to that faculty. *Id.*

The accusative after a verb transitive, or a sentence in room thereof, is called, by grammarians, the *object* of the verb. *Clarke.*

The basilisk should be destroyed, in regard he first receiveth the rays of his antipathy and venomous emission, which *objectively* move his sense. *Browne.*

The act of faith is applied to the *object* according to the nature of it; to what is already past, as past; to what is to come, as still to come; to that which is present, as it is still present. *Pearson.*

Truth is the *object* of our understanding, as good is of the will. *Dryden's Dufrenoy.*

It was *objected* against a late painter that he drew many graceful pictures, but few of them were like. *Id.*

This may fitly be called a determinate idea, when, such as it is at any time *objectively* in the mind, it is annexed, and without variation determined to an articulate sound, which is to be steadily the sign of that same *object* of the mind. *Locke.*

I have shewn your verses to some, who have made that *objection* to them. *Walsh's Letters.*

This the adversaries of faith have too much reason to *object* against too many of its professors; but against the faith itself nothing at all. *Sprat.*

Those things in ourselves, are the only proper *objects* of our zeal, which, in others, are the unquestionable subjects of our praises. *Id.*

Whoever makes such *objections* against an hypothesis hath a right to be heard, let his temper and genius be what it will. *Burnet.*

Others *object* the poverty of the nation, and difficulties in furnishing greater supplies. *Addison.*

An *objectglass* of a telescope I once mended, by grinding it on pitch with putty, and leaning easily on it in the grinding, lest the putty should scratch it. *Newton's Optics.*

But these *objectors* must the cause upbraid,
That has not mortal man immortal made. *Blackmore.*

There was but this single fault that Erasmus, though an enemy, could *object* to him. *Atterbury.*

This passenger felt some degree of concern at the sight of so moving an *object*, and therefore withdrew. *Id.*

Let the *objectors* consider, that these irregularities must have come from the laws of mechanism. *Bentley.*

Pallas to their eyes
The mist *objected*, and condensed the skies. *Pope.*

Certainty, according to the schools, is distinguished into *objective* and subjective. *Objective* certainty is when the proposition is certainly true in itself; and subjective, when we are certain of the truth of it. The one is in things, the other in our minds. *Watts's Logick.*

As you have no mistress to serve, so let your own soul be the *object* of your daily care and attendance. *Law.*

Refined sense, and exalted sense be not so useful as common sense; their rarity, their novelty, and the nobleness of their *objects*, make some compensation, and render them the admiration of mankind, as gold, though less serviceable than iron, acquires from its scarcity a value which is much superior. *Hume.*

OBT. It signifies a funeral solemnity, or office for the dead, most commonly performed

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when the corpse lies in the church uninterred. The anniversary of any person's death was also called the obit; and to observe such day with prayers and alms, or other commemoration, was the keeping of the obit. In religious houses they had a register, wherein they entered the obits or obituary days of their founders and benefactors; which was thence termed obituary. The tenure of obit or chantry lands is taken away and extinct by 1 Edward VI. c. 14, 15, and Car. II. c. 9.

OBJURGATE, *v. a.* } Lat. *objurgo*. To
OBJURGATION, *n. s.* } chide or reprove.
OBJURGATORY, *adj.*

If there be no true liberty, but all things come to pass by inevitable necessity, then what are all interrogations and *objurgations*, and reprehensions and expostulations? *Bramhall.*

OBLATE, *adj.* Lat. *oblatus*. Flatted, as a globe at the poles.

By gravitation bodies on this globe will press towards its center, though not exactly thither, by reason of the *oblate* spheroidal figure of the earth, arising from its diurnal rotation about its axis. *Cheyne's Philosophical Principles.*

An **OBLATE SPHEROID** has its axis shorter than its middle diameter, being formed by the rotation of an ellipse about the shorter axis.

OBLATI, Lat., in church history, secular persons who devoted themselves and their estates to some monastery, into which they were admitted as a kind of lay brothers. The form of their admission was putting the bell-ropes of the church round their necks as a mark of servitude. They wore a religious habit, different from that of the monks.

OBLATION, *n. s.* Fr. *oblation*; Lat. *oblatus*. An offering; sacrifice, or any thing connected with religious worship.

She looked upon the picture before her, and straight sighed, and straight tears followed, as if the idol of duty ought to be honoured with such *oblations*. *Sidney.*

Many conceive in the *oblation* of Jephtha's daughter, not a natural but a civil kind of death, and a separation from the world. *Browne.*

The kind *oblation* of a falling tear. *Dryden.*
The will gives worth to the *oblation*, as to God's acceptance, sets the poorest giver upon the same level with the richest. *South.*

Behold the coward, and the brave,
All make *oblations* at this shrine. *Swift.*

OBLIGATE, *v. a.* } Fr. *obligation*; Lat.
OBLIGATION, *n. s.* } *obligo*. Obligate and
OBLIGATORY, *adj.* } oblige are both used
OBLIGATE, *v. a.* } for to bind or compel
OBLIGEE, *n. s.* } by contract, duty, or
OBLIGEMENT, } gratitude; and the latter
OBLIGER, } for to please; gratify: obligation is the
OBLIGING, *part. adj.* } binding power; con-
OBLIGINGLY, *adv.* } tract; act; engage-
OBLIGINGNESS, *n. s.* } ment, or favor: obligatory, imposing or conveying obligation; coercive; used with *to* or *on*: obligee is the person bound by an obligation: the obliger, he who binds: obligement (from the Fr. *obligement*), synonymous with obligation: obliging, compliant; complaisant; urbane; engaging: obligingly, civilly; complaisantly: obligingness, force; obligation: civility; urbanity.

It is safer to affront some people than to *oblige* them; for the better a man deserves the worse they will speak of him, as if the possessing of open hatred to their benefactors were an argument that they lie under no *obligation*. *Sidney.*

Whatever we owe it is our part to find where to pay it; for, whether the *obliger* be good or bad, the debt is still the same. *Id.*

Your father lost a father;
That father his; and the survivor bound
In filial *obligation*, for some term,

To do obsequious sorrow. *Shakspeare. Hamlet.*

There was no means for him as a Christian to satisfy all *obligations* both to God and man, but to offer himself for a mediator of an accord and peace.

Bacon's Henry VII.

And concerning the lawfulness, not only permissively, but whether it be not *obligatory* to Christian princes and states. *Bacon.*

This doom though reversible by the tribunal of heaven is still *obligatory* on earth. *Bp. Hall.*

I will not resist, whatever it is, either of divine or human *obligement*, that you lay upon me.

Milton's Education.

The heir of an obliged person is not bound to make restitution, if the *obligation* passed only by a personal act; but, if it passed from his person to his estate, then the estate passes with all its burthen.

Taylor's Rule of Holy Living.

As long as the law is *obligatory*, so long our obedience is due. *Id.*

Nothing can be more reasonable than that such creatures should be under the *obligation* of accepting such evidence as in itself is sufficient for their conviction. *Wilkins.*

Obligation is thralldom, and thralldom is always hateful. *Hobbes.*

He that depends upon another, must
Oblige his honour with a boundless trust.

Waller.

Religion *obliges* men to the practice of those virtues which conduce to the preservation of our health.

Tillotson.

The better to satisfy this *obligation*, you have early cultivated the genius you have to arms. *Dryden.*

Vain wretched creature, how art thou misled,
To think thy wit these godlike notions bred!
These truths are not the product of thy mind,
But dropt from heaven, and of a nobler kind:
Revealed religion first informed thy sight,
And reason saw not, till faith sprung the light.
Thus man by his own strength to heaven would soar,
And would not be *obliged* to God for more. *Id.*

Let this fair princess but one minute stay.

A look from her will your *obligements* pay. *Id.*

Where is the *obligation* of any man's making me a present of what he does not care for himself?

L'Estrange.

Nothing could be more *obliging* and respectful than the lion's letter was, in appearance; but there was death in the true intent. *Id.*

Some natures are so sour and so ungrateful that they are never to be *obliged*. *Id.*

Nobody is under an *obligation* to know every thing: knowledge and science in general is the business only of those who are at ease and leisure.

Locke.

A great man gets more by *obliging* his inferior, than by disdaining him; as a man has a greater advantage of sowing and dressing his ground than he can have by trampling upon it. *South.*

The church hath been thought fit to be called Catholic, in reference to the universal obedience which it prescribeth; both in regard to the persons, *obliging* men of all conditions, and in relation to the precepts,

requiring the performance of all the evangelical commands. *Pearson.*

They look into them not to weigh the *obligingness*, but to quarrel with the difficulty of the injunctions: not to direct practice, but excuse prevarications.

Decay of Piety.

Happy the people who preserve their honour
By the same duties that *oblige* their prince!

Addison's Cato.

Monseigneur Strozzi has many curiosities, and is very *obliging* to a stranger who desires the sight of them. *Addison.*

Eugenius informs me very *obligingly*, that he never thought he should have disliked any passage in my paper. *Id.*

The law must *oblige* in all precepts, or in none. If it *oblige* in all, all are to be obeyed; if it *oblige* in none, it has no longer the authority of a law.

Rogers.

No ties can bind that from constraint arise,
Where either's forced, all *obligation* dies.

Granville.

To those hills we are *obliged* for all our metals, and with them for all the conveniencies and comforts of life. *Bentley.*

When interest calls off all her sneaking train,

When all the' *obliged* desert, and all the vain,

She waits or to the scaffold or the cell. *Pope.*

Obliging creatures! make me see

All that disgraced my betters, met in me. *Id.*

So *obliging* that he ne'er *obliged*. *Id.*

A people long' used to hardships look upon themselves as creatures at mercy, and that all impositions laid upon them by a stronger hand are legal and *obligatory*. *Swift.*

If this patent is *obligatory* on them, it is contrary to acts of parliament and therefore void. *Id.*

I see her taste each nauseous draught,
And so *obligingly* am caught;
I bless the hand from whence they came,
Nor dare distort my face for shame.

Id. Miscellanies.

A man who owes a little can clear it off in a very little time; whereas a man who, by long negligence owes a great deal, despairs of being ever able to discharge the *obligation*, and therefore never looks into his accounts at all. *Chesterfield.*

OBLIGATION, in law, signifies a bond, wherein is contained a penalty, with a condition annexed for the payment of money, &c. The difference between it and a bill is, that the latter is generally without a penalty or condition, though it may be made *obligatory*; and obligations are sometimes, by matter of record, as statutes and recognizances.

OBLIQUATION, *n. s.* Lat. *obliquatio*, from *obliquus*. Declination from straightness or perpendicularity; obliquity.

The change made by the *obligation* of the eyes, is less in colours of the densest than in thin substances. *Newton's Optics.*

OBLIQUE', *adj.*

OBLIQUE'LY, *adv.*

OBLIQUE'NESS, *n. s.*

OBLIQUITY.

Fr. *oblique*; Lat. *obliquus*. Sideways; transverse; not direct or perpendicular; not parallel;

applied to all the cases of nouns beside the nominative: obliqueness and obliquity both mean deviation from rectitude either lineal or moral.

Has he given the lie

In circle or *oblique* or semicircle,

Or direct parallel you must challenge him.

Shakspeare.

All is *oblique*,
There is nothing level in our cursed nature .
But direct villany. *Id.*

One by his view
Mought deem him born with ill-disposed skies,
When *oblique* Saturn sat in the house of the agonies. *Spenser.*

There is in rectitude, beauty; as contrariwise in
obliquity, deformity. *Hooker.*

If sound be stopped and repercussed, it cometh
about on the other side in an *oblique* line. *Bacon.*

Which else to several spheres thou must ascribe,
Moved contrary with thwart *obliquities*. *Milton.*

Count Rhodophill, cut out for government and
high affairs, and balancing all matters in the scale of
his high understanding, hath rectified all *obliquities*. *Howel.*

Of meridian altitude it hath but twenty-three de-
grees, so that it plays but *obliquely* upon us, and as
the sun doth about the twenty-third of January. *Browne.*

For a rational creature to conform himself to the
will of God in all things carries in it a rational
rectitude or goodness; and to disobey or oppose
his will in any thing imports a moral *obliquity*. *South.*

They haply might admit the truths *obliquely* le-
velled, which bashfulness persuaded not to enquire
far. *Fell.*

His discourse tends *obliquely* to the detracting from
others, or the extolling of himself. *Addison.*

May they not pity us, condemned to bear
The various heaven of an *oblique* sphere;
While by fixed laws, and with a just return,
They feel twelve hours that shade, for twelve that
burn? *Prior.*

Bavaria's stars must be accused, which shone
That fatal day the mighty work was done,
With rays *oblique* upon the Gallic sun. *Id.*
It has a direction *oblique* to that of the former
motion. *Cheyne.*

Criticks form a general character from the obser-
vation of particular errors, taken in their own *oblique*
or imperfect views; which is as unjust as to make a
judgment of the beauty of a man's body from the
shade it casts in such and such a position. *Broomes.*

Declining from the noon of day,
The sun *obliquely* shoots his burning ray. *Pope.*
He composed twice in the morning, and dictated
in the day, sitting *obliquely* in an elbow chair, with
his leg thrown over the arm. *Johnson.*

OBLIQUE CIRCLE, in the stereographic projec-
tion, is any circle that is oblique to the plane of
projection.

OBLIQUE DESCENSION is that point of the
equinoctial which sets with the centre of the sun,
or star, or other point of the heavens, in an oblique
sphere.

OBLIQUE FORCE, or percussion, or power, or
stroke, is that made in a direction oblique to a
body or plane. It is demonstrable that the effect
of such oblique force, &c., upon the body, is, to
an equal perpendicular one, as the sine of the
angle of incidence is to radius.

OBLIQUE LINE, that which, falling on another
line, makes oblique angles with it, viz. one acute,
and the other obtuse.

OBLIQUE PLANES, in dialling, are those which
decline from the zenith, or incline towards the
horizon. See DIAL.

OBLIQUE SAILING, in navigation, is when a
ship sails upon some rhumb between the four
cardinal points, making an oblique angle with

the meridian; in which case she continually
changes both latitude and longitude. See NAVI-
GATION.

OBLITERATE, *v. a.* } Lat. *oblitero*. To
OBLITERATION, *n. s.* } efface that which has
been written; hence to wear out or destroy.

The wickedness of Eli's house was neither purged
by sacrifice, nor *obliterated* by time. *Bp. Hall.*

Wars and desolations *obliterate* many ancient mo-
numents. *Hale.*

Considering the casualties of wars, transmigra-
tions, especially that of the general flood, there
might probably be an *obliteration* of all those monu-
ments of antiquity that ages precedent at some time
have yielded. *Id. Origin of Mankind.*

These simple ideas, the understanding can no
more refuse to have, or alter, or blot them out, than
a mirror can refuse, alter, or *obliterate* the images,
which the objects set before it produce. *Locke.*

Let men consider themselves as ensnared in that
unhappy contract, which has rendered them part
of the devil's possession, and contrive how they may
obliterate that reproach, and disentangle their mort-
gaged souls. *Decay of Piety.*

OBLIVION, *n. s.* } Lat. *oblivio*. Forget-
OBLIVIOUS, *adj.* } fulness; non-remem-
brance; cessation of memory: oblivious, caus-
ing oblivion.

Water drops have worn the stones of Troy,
And blind *oblivion* swallowed cities up,
And mighty states characterless are grated
To dusty nothing. *Shakespeare. Troilus and Cressida.*

Thou shouldst have heard many things of worthy
memory, which now shall die in *oblivion*, and thou
return unexperienced to thy grave. *Shakespeare.*

Raze out the written troubles of the brain,
And with some sweet *oblivious* antidote
Cleanse the foul bosom. *Id. Macbeth.*

By the act of *oblivion*, all offences against the
crown, and all particular trespasses between subject
and subject, were pardoned, remitted, and utterly
extinguished. *Davies.*

Knowledge is made by *oblivion*, and, to purchase a
clear and warrantable body of truth, we must forget
and part with much we know. *Browne.*

Among our crimes *oblivion* may be set;
But 'tis our king's perfection to forget. *Dryden.*
Can they imagine that God has therefore forgot
their sins, because they are not willing to remember.
them? Or will they measure his pardon by their
own *oblivion*. *South.*

The British souls
Exult to see the crowding ghosts descend
Unnumbered; well avenged, they quit the cares
Of mortal life, and drink the *oblivious* lake. *Philips.*

Oh, born to see what none can see awake!
Behold the wonders of the *oblivious* lake. *Pope.*
How many good and generous actions have been
sunk into *oblivion* by a distrustful look, or stamp
with the imputation of proceeding from bad motives
by a mysterious and seasonable whisper! *Stearns.*

OBLONG, *adj.* } French *oblong*; Lat. *ob-*
OBLONGLY, *adv.* } *longus*. Longer than broad;
in an oblong form.

The best figure of a garden I esteem an *oblong*
upon a descent. *Temple's Miscellanies.*

Every particle, supposing them globular or not
very *oblong*, would be above nine million times their
own length from any other particle. *Bentley.*

Thus a rectangled parallelogram, whose sides are
unequal, is *oblong*; so also an ellipsis is *oblong*, *c.*
G 2

which shape Cassini originally opined the earth to be. *Sharpe.*

The surface of the temperate climate is larger than it would have been, had the globe of our earth, or of the planets, been either spherical, or oblongly spheroidal. *Cheyne.*

AN OBLONG SPHEROID is that which is formed by an ellipse revolved about its longer or transverse axis, in contradistinction from the oblate spheroid, or that which is flattened at its pole.

OBLOQUY, *n. s.* Lat. *obloquor*. Censorious language; slander; reproach.

Reasonable moderation had freed us from being deservedly subject unto that bitter kind of *obloquy*, whereby as the church of Rome doth, under the colour of love towards those things which be harmless, maintain extremely most hurtful corruptions; so we peradventure might be upbraided, that, under colour of hatred towards those things that are corrupt, we are on the other side as extreme even against most harmless ordinances. *Hooker.*

My chastity's the jewel of our house,
Bequeathed down from many ancestors;
Which were the greatest *obloquy* i' th' world
In me to lose. *Shakespeare.*

Here now aspersions, with new *obloquies*,
Are laid on old deserts. *Daniel's Civil War.*

Canst thou with impious *obloquy* condemn
The just decree of God, pronounced and sworn? *Milton.*

Shall names, that made your city the glory of the earth, be mentioned with *obloquy* and detraction? *Addison.*

Every age might perhaps produce one or two true geniuses if they were not sunk under the censure and *obloquy* of plodding, servile, imitating pedants. *Swift.*

OBMUTES'CENCE, *n. s.* Lat. *obmutesco*. Loss of speech.

A vehement fear often produceth *obmutescence*. *Broune.*

OBNOXIOUS, *adj.* } Lat. *obnoxius*. Lia-
OBNOXIOUSNESS, *n. s.* } ble; exposed; particularly applied to exposure to punishment or disadvantage: hence reprehensible; not of good fame.

I propound a character of justice in a middle form, between the speculative discourses of philosophers, and the writings of lawyers, which are tied and *obnoxious* to their particular laws. *Bacon.*

But what will not ambition and revenge

Descend to? who aspires, must down as low

As high he soared; *obnoxious* first or last,

To basest things. *Milton's Paradise Lost.*

Conceiving it most reasonable to search for primitive truth in the primitive writers, and not to suffer his understanding to be prepossessed by the contrived and interested schemes of modern, and withal *obnoxious* authors. *Fell.*

All are *obnoxious*, and this faulty land,

Like fainting Heister, does before you stand,

Watching your sceptre. *Waller.*

We know ourselves *obnoxious* to God's severe justice, and that he is a God of mercy, and hateth sin; and, that we might not have the least suspicion of his unwillingness to forgive, he hath sent his only begotten son into the world, by his dismal sufferings and cursed death, to expiate our offences. *Calamy.*

Thy name, O Varus, if the kinder powers
Preserve our plains, and shield the Mantuan towers,
Obnoxious by Cremona's neighbouring crime,
The wings of swans, and stronger pinioned rhyme
Shall raise aloft. *Dryden.*

Beasts lie down,

To dews *obnoxious* on the grassy floor. *Id.*

They leave the government a trunk naked, defenceless, and *obnoxious* to every storm. *Davenant.*

OBNU'BILATE, *v. a.* Lat. *obnubilo*. To cloud; to obscure.

OBOLARIA, in botany, a genus of the angiospermia order and didynamia class of plants; natural order fortieth, personate: CAL. bifid: COR. campanulated and quadrid: CAPS. unilocular, bivalved, and polyspermous; the stamina rising from the divisions of the corolla. Species one only, a native of Virginia, bearing clusters of beautiful pale red flowers.

OB'OLE, *n. s.* Lat. *obolus*. In pharmacy, twelve grains.

OBOLUS, an ancient silver money of Athens, the sixth part of a drachma; worth somewhat more than a penny farthing sterling. The word is derived from the Greek *οβολος* or *οβελος*, a spit or broach; either because it bore such an impression, or because, according to Eustathius, it was in form thereof. But those now in the cabinets of antiquaries are round.

OBOLUS, in medicine, is used for a weight of ten grains, or half a scruple.

OBRECHT (Ulric), a learned German, born of a noble family in Strasburg in 1646, where he filled the chairs of civil law and history with great distinction. He was a Protestant; but when Louis XIV. made himself master of Strasburg, and went thither with his court, he changed, and abjured in 1684. In 1685 the king nominated him to preside in his name in the senate of Strasburg, with the title of prætor royal, in imitation of the ancient Romans; from which time he applied himself entirely to public affairs. He was the editor, translator, and writer of several learned works, and died in 1701. His principal pieces are, *Prodromus rerum Alsatiarum*, 4to.; *Excerpta Historica de naturâ Successionis in Monarchia Hispan.* 3 vols. 4to.; *Quintilian with notes*; and *Dictys Cretensis*.

OBREPTION, *n. s.* Lat. *obreptio*. The act of creeping in with secrecy or by surprise.

OBROGATE, *v. a.* Lat. *obrogo*. To proclaim a contrary law for the dissolution of the former.—We insert the four last words after Dr. Johnson; but find no other authority for them.

OBSCENE, *adj.* } Fr. *obscene*; Lat. *ob-*

OBSCENE'LY, *adv.* } *scenus*. Lewd; im-

OBSCENE'NESS, *n. s.* } dest; not agreeable to

OBSCEN'ITY. } chastity or delicacy: the

derivatives corresponding.

Chemos the *obscene* dread of Moab's sons.

Milton.

Care shuns thy walks, as at the cheerful light,
The groaning ghosts, and birds *obscene* take flight..

Dryden.

A girdle foul with grease binds his *obscene* attire.

Id.

Home as they went, the sad discourse renewed, }
Of the relentless dame to death pursued, }
And of the sight *obscene* so lately viewed. *Id.* }

Words that were once chaste, by frequent use
grow *obscene* and uncleanly. *Watts's Logic.*

No pardon vile *obscenity* should find,
Though wit and art conspire to move your mind.

Pope.

It is the sun's fate, like your's, to be displeasing to
owls and *obscure* animals, who cannot bear his lustre.
Id. Letters.

OBSCURE', *adj. & v. a.* Fr. *obscur*; Lat. *obscura*'TION, *n. s.* } *obscurus*. Dark ;
OBSCURELY, *adv.* } gloomy ; partially
OBSCURENESS, *n. s.* } enlightened ; un-
OBSCURITY. } enlightened ; hence
abstruse ; unintelligible ; living in the dark :
to *obscure* is to darken ; make less visible ; less
glorious, beautiful, striking, or intelligible ; to
conceal : the adverb and nouns follow these
senses.

Lo ! a day of darkness and *obscurity*, tribulation
and anguish upon the earth. *Ether xi. 8.*

Whoso curseth his father or mother, his lamp shall
be put out in *obscur* darkness. *Proverbs.*

They are all couched in a pit hard by Herne's oak,
with *obscured* lights ; which, at the very instant
of Falstaff's and our meeting, they will at once dis-
play to the night. *Shakespeare.*

The *obscure* bird clamoured the live-long night.
Id.

What, must I hold a candle to my shames ?
They in themselves, good sooth, are too, too light.
Why, 'tis an office of discovery, love,
And I should be *obscured*. *Id.*

Should Cynthia quit thee, Venus, and each star,
It would not form one thought dark as mine are :
I could lend them *obscureness* now, and say,
Out of myself there should be no more day. *Donne.*

O might I here

In solitude live savage, in some glade
Obscured, where highest woods, impenetrable
To sun or starlight, spread their umbrage broad.
Milton.

The woman's seed at first *obscurely* told,
Now amplier known, thy Saviour and thy Lord.
Id.

Who shall tempt with wandering feet
The dark unbottomed infinite abyss,
And through the palpable *obscure* find out
His uncouth way ? *Id. Paradise Lost.*

Thinking by this retirement to *obscure* himself
from God, he infringing the omniscience and essen-
tial ubiquity of his Maker. *Browne's Vulgar Errors.*

Not to mention that *obscureness* that attends pro-
phetic raptures, there are divers things knowable by
the bare light of nature, which yet are so uneasy to
be satisfactorily understood by our imperfect intel-
lects, that, let them be delivered in the clearest ex-
pressions, the notions themselves will yet appear
obscure. *Boyle on Colours.*

There is scarce any duty which has been so
obscured by the writings of learned men as this.
Wake.

By private consent it hath been used in dangerous
times to *obscure* writing, and make it hard to be read
by others not acquainted with the intrigue. *Bolder.*

Think'st thou, vain spirit, thy glories are the
same,
And seest not sin *obscures* thy godlike frame ?
I know thee now by thy ungrateful pride,
That shows me what thy faded looks did hide.
Dryden.

You are not for *obscurity* designed,
But, like the sun, must cheer all human kind.
Id.

Such was the rise of this prodigious fire,
Which in mean buildings first *obscurely* bred,
From thence did soon to open streets aspire. *Id.*

As to the sun and moon, their *obscuration* or change
of colour happens commonly before the eruption of a
terry mountain. *Burnet.*

What lies beyond our positive idea towards infinity,
lies in *obscurity*, and has the undeterminate confu-
sion of a negative idea, wherein I know I do not
comprehend all I would, it being too large for a finite
capacity. *Locke.*

There live retired
Content thyself to be *obscurely* good.
Addison.

He says, that he is an *obscure* person ; one, I sup-
pose, that is in the dark. *Atterbury.*

Sudden the thunder blackens all the skies,
And the winds whistle, and the surges roll
Mountains on mountains, and *obscure* the pole.
Pope.

In poverty's low barren vale,
Thick mists, *obscure*, involved me round ;
Though oft I turned the wistful eye,
No ray of fame was to be found. *Burns.*
Shall gentle C——e pass unnoticed here,
To turgid ode and tumid stanza dear,
Though themes of innocence amuse him best
Yet still *obscurity's* a welcome guest. *Byron.*

What is writ, is writ
Would it were worthier ! but I am not now
That which I have been, and my visions flit
Obscurely now before me, and the glow
Which in my spirit dwelt is fluttering faint and low.
Id.

OBSECRATION, *n. s.* Lat. *obsecratio*, *ob-*
secro. Intreaty ; supplication.

OBSEQUIES, *n. s.* Fr. *obsequies*, *obsequium*.
Funeral rites or solemnities.

There was Doriaus valiantly requiting his friends
help, in a great battle deprived of life, his *obsequies*
being not more solemnized by the tears of his parta-
kers, than the blood of his enemies. *Sidney.*

Fair Juliet, that with angels doth remain,
Accept this latest favour at my hand ;
That living honoured thee, and being dead,
With funeral *obsequies* adorn thy tomb.
Shakespeare.

Or tune a song of victory to me,
Or to thyself, sing thine own *obsequy*.
Cromwell.

Him I'll solemnly attend,
With silent *obsequy* and funeral train,
Home to his father's house.
Milton's Agonistes.

I spare the widow's tears, their woeful cries,
And howling at their husband's *obsequies* ;
How Theseus at these funerals did assist,
And with what gifts the mourning dames dismiss.
Dryden.

His body shall be royally interred,
I will, myself,
Be the chief mourner at his *obsequies*. *Id.*
Alas ! poor Poll, my Indian talker dies,
Go, birds, and celebrate his *obsequies*. *Creech.*

OBSEQUENS (Julius), a Latin writer, sup-
posed to have lived before Honorius's reign. He
made a collection of the prodigies which Livy
related in his history. There are several editions
of those remains. Lycosthenes endeavoured to
supply what was wanting in the original.

OBSEQUIOUS, *adj.* } Latin *obsequium*.
OBSEQUIOUSLY, *adv.* } Compliant ; obedient ;
OBSEQUIOUSNESS, *n. s.* } unresisting ; servile :
Shakespeare uses it for funeral : the adverb and
substantive follow the foregoing senses.

Your father lost a father ;
That father his ; and the survivor bound
In filial obligation, for some term,
To do *obsequious* sorrow. *Shakespeare. Hamlet.*

I a while *obsequiously* lament
The untimely fall of virtuous Lancaster.

Shakespeare.

Adore not so the rising son, that you forget the
father, who raised you to this height; nor be you so
obsequious to the father, that you give just cause to
the son to suspect that you neglect him. *Bacon.*

I am ashamed to see these thy creatures so *obse-*
quiously pliant unto me while I consider my dispo-
sition and deportment towards thee my Creator.

Bp. Hall.

At his command the up-rooted hills retired
Each to his place; they heard his voice, and went
Obsequious.

Milton's Paradise Lost.

I followed her; she what was honour knew,
And, with *obsequious* majesty, approved
My pleaded reason. *Id.*

See how the *obsequious* wind and liquid air
The Theban swan does upward bear. *Cowley.*

A genial cherishing heat acts so upon the fit and
obsequious matter, as to organize and fashion it ac-
cording to the exigencies of its own nature. *Boyle.*

They rise, and with respectful awe,
At the word given, *obsequiously* withdraw.

Dryden.

We cannot reasonably expect that any one
should readily and *obsequiously* quit his own opi-
nion, and embrace ours with a blind resignation.

Locke.

They apply themselves both to his interest and
humour, with all the arts of flattery and *obsequious-*
ness, the surest and the readiest way to advance a
man. *South.*

His servants weeping,
Obsequious to his orders, bear him hither.

Addison.

The vote of an assembly, which we cannot recon-
cile to public good, has been conceived in a private
brain, afterwards supported by an *obsequious* party.

Swift.

Obsequious, artful, voluble, and gay,
On Britain's fond credulity they play,
All sciences a fasting Monaster know,
And bid him go to hell, to hell he goes.

Johnson.

OBSERVE', *v. a. & v. n.*

OBSER'VABLE, *adj.*

OBSER'VABLY, *adv.*

OBSER'VANCE, *n. s.*

OBSER'VANT, *adj.*

OBSERVA'TION, *n. s.*

OBSERVA'TOR,

OBSER'VATORY,

OBSER'VER,

OBSER'VING, *part. adj.*

OBSER'VINGLY, *adv.*

Fr. observer;

Lat. observo. To

regard with at-

tention; watch;

note; inspect;

keep or practise

strictly or reli-

giously; to be at-

tentive; make a

remark: observ-

able is worthy

or proper to be remarked; remarkable; eminent:
observance, notice; attention; respectful
or ceremonial practice; rule of practice; punc-
tilious or reverential regard: observant is a cor-
respondent adjective: observation, the act or
habit of observing; remark or note made; obe-
dience: observator and observer, one who ob-
serves or peculiarly remarks: observatory, a
place for astronomical or scientific observations:
observing is synonymous with observant.

A night to be much *observed* unto the Lord, for
bringing them out of Egypt. *Erodus xxii. 42.*

Many nations are superstitious, and diligent ob-
servers of old customs, which they receive by tra-
dition from their parents, by recording of their bards
and chronicles. *Spenser.*

Use all the *observance* of civility,
Like one well studied in a sad ostent
To please his grandam. *Shakespeare.*

These kind of knaves in this plainness,
Harbour more craft, and more corrupter ends,
Than twenty silky ducking *observants*
That stretch their duties nicely. *Id.*

Angelo,

There is a kind of character in thy life
That to the *observer* doth thy history

Fully unfold. *Id. Measure for Measure.*

There is some soul of goodness in things evil,
Would men *observingly* distil it out. *Shakespeare.*

These writers, which gave themselves to follow and
imitate others, were *observant* spectators of those
masters they admired. *Raleigh.*

The king after the victory, as one that had been
bred under a devout mother, and was in his nature a
great *observer* of religious forms, caused Te Deum to
be solemnly sung in the presence of the whole army
upon the place. *Bacon.*

Having had such experience of his fidelity and ob-
servance abroad, he found himself engaged in honour
to support him. *Wotton.*

If a slow-paced star had stolen away,

From the *observer's* marking, he might stay
Three hundred years to see't again. *Donne.*

We are told how *observant* Alexander was of his
master Aristotle. *Digby on the Soul, Dedication.*

Remember, that as thine eye *observes* others, so art
thou *observed* by angels and by men. *Taylor.*

There can be no observation or experience of
greater certainty, as to the increase of mankind, than
the strict and vigilant *observance* of the calculations
and registers of the bills of births and deaths.

Hale's Origin of Mankind.

The *observer* of the bills of mortality, hath given
us the best account of the number that late plagues
have swept away. *Hale.*

These proprieties affixed unto bodies from consid-
erations deduced from east, west, or those *observable*
points of the sphere, will not be justified from such
foundations. *Brownne.*

It is impossible to have thunder in a clear sky as
it is *observably* recorded in some histories. *Id.*

Love rigid honesty

And strict *observance* of impartial laws

Roscommon.

Arcite left his bed, resolved to pay
Observance to the month of merry May.

Dryden.

She may be handsome, yet be chaste, you say,—
Good *observer*, not so fast away. *Id.*

If our idea of infinity be got from the power we
observe in ourselves, of repeating without end our
own ideas, it may be demanded why we do not at-
tribute infinity to other ideas, as well as those of
space and duration. *Locke.*

Company, he thinks, lessens the shame of vice
by sharing it; and therefore, if he cannot wholly
avoid the eye of the *observer*, he hopes to distract it
at least by a multiplicity of objects. *South.*

He was so strict an *observer* of his word that no
consideration whatever could make him break it.

Prior.

I took a just account of every *observable* circum-
stance of the earth, stone, metal, or other matter,
from the surface quite down to the bottom of the pit,
and entered it carefully into a journal.

Woodward's Natural History.

Another was found near the *observatory* in Green-
wich Park. *Id. On Fossils.*

The great and more *observable* occasions of exer-
cising our courage occur but seldom. *Rogers.*

Some represent to themselves the whole of religion as consisting in a few easy *observances*, and never lay the least restraint on the business or diversions of this life. *Rogers.*

The rules of our practice are taken from the conduct of such persons as fall within our *observation*. *Id.*

Sometimes purulent matter may be discharged from the glands in the upper part of the wind-pipe, while the lungs are sound and uninfected, which now and then has imposed on undistinguishing *observers*. *Blackmore.*

Himself often read useful discourses to his servants on the Lord's day, of which he was always a very strict and solemn *observer*. *Atterbury.*

Wandering from clime to clime *observant* strayed, Their manners noted, and their states surveyed. *Pope.*

Wherever I have found her notes to be wholly another's, which is the case of some hundreds, I have barely quoted the true proprietor, without *observing* upon it. *Pope's Letters.*

Careful *observers* may foretell the hour,

By sure prognostics when to dread a shower. *Swift.*

In matters of human prudence, we shall find the greatest advantage by making wise *observations* on our conduct, and of the events attending it. *Watts's Logick.*

Observing men may form many judgments by the rules of similitude and proportion, where causes and effects are not entirely the same. *Watts.*

He alone is an acute *observer*, who can *observe* minutely without being *observed*. *Sterns.*

Let *observation* with extensive view

Survey mankind from China to Peru ;

Remark each anxious toil, each eager strife,

And watch the busy scenes of crowded life. *Johnson.*

Such dupes are men to custom, and so prone

To reverence what is ancient, and can plead

A course of long *observance* for its use,

That even servitude, the worst of ills,

Because delivered down from sire to son,

Is kept and guarded as a sacred thing. *Cowper.*

OBSERVATORY. An observatory is a term applied emphatically to buildings erected and furnished with instruments for astronomical observations. Formerly it assumed the shape of a tower or turret erected on some eminence ; but in modern erections of this kind convenience and scope in regard to aspect, and solidity of structure, have been more particularly regarded.

Astronomers carry us back not only to the pyramids of Egypt, but even to the tower of Babel as originally designed for some purpose of this kind. It would appear probable that the temple of Belus was devoted to this use by the Chaldean astronomers ; as was the famous tomb of Osmandias, in Egypt. See our article **ASTRONOMY**. At Alexandria an observatory was built more than 300 years before the Christian era, and continued in repute for upwards of five centuries.

ORIENTAL OBSERVATORIES. The oriental vestiges of ancient observatories are well collected in Bailly's *Histoire de l'Astronomie Indienne*, and in the *Asiatic Researches*, by Sir William Jones, Mr. Colebrooke, &c. The Hindoo ob-

servatories of more modern times are said to have been five in number, viz. at Delhi, Benares, Matra, Oujein, and Suvai Jeypour, and were erected by order of Mahommed Shah, with a view to reforming the calendar. The task of constructing them was committed to Jeysing, or Jeyasinha, rajah of Ambhere, learned in the mysteries of science.

'Seeing that very important affairs,' says Jeysing, 'both regarding religion and the administration of empire, depend upon these ; and that in the time of the rising and setting of the planets, and the seasons of eclipses of the sun and moon, many considerable disagreements of a similar nature were found ; I (Jeysing) represented it to his majesty of dignity and power, the sun of the firmament of felicity and dominion, the splendor of the forehead of imperial magnificence, the unrivalled pearl of the sea of sovereignty, the incomparably brightest star of the heaven of empire,' &c. &c. His majesty was pleased to reply, 'Since you, who are learned in the mysteries of science, have a perfect knowledge of this matter ; having assembled the astronomers and geometricians of the faith of Islam and the Brahmins and Pundits, and the astronomers of Europe, and having prepared all the apparatus of an observatory, do you so labor for the ascertaining of the point in question, that the disagreement between the calculated times of those phenomena and the times in which they are observed to happen may be rectified.' See a curious paper containing this astronomer's own account of his proceedings in the *Asiatic Researches*, vol. v. p. 177. Of the Benares observatory we have in the *Philosophical Transactions* vol. lxvii. the following account from Sir Robert Barker ; who says that it was said in his time to have been built by the emperor Acber. Mr. Hunter's would seem, however, to be the best authenticated account.

'We entered this building,' says Sir Robert Barker, 'and went up a stair-case to the top of a part of it, near the river Ganges, that led to a large terrace, where, to my surprise and satisfaction, I saw a number of instruments yet remaining, in the best preservation, stupendously large, immovable from the spot, and built of stone, some of them being upwards of twenty feet in height ; and, though they are said to have been erected 200 years before, the graduations and divisions on the several arcs appeared as well cut, and as accurately divided, as if they had been the performance of a modern artist. The execution in the construction of these instruments exhibited a mathematical exactness in the fixing, bearing, and fitting of the several parts, in the necessary and sufficient supports to the very large stones that compose them, and in joining and fastening them into each other by means of lead and iron cramps. The situation of the two large quadrants whose radius is nine feet two inches, by being at right angles with a gnomon at 25° elevation, are thrown into such an oblique situation as to render them the most difficult, not only to construct of such a magnitude, but to secure in the position for so long a period, and affords a striking instance of the

ability of the architect in their construction; for, by the shadow of the gnomon thrown on the quadrants, they do not appear to have altered in the least from their original position; and so true is the line of the gnomon that by applying the eye to a small iron ring, of an inch diameter, at one end, the sight is carried through three others of the same dimension to the extremity at the other end, distant thirty-eight feet eight inches, without obstruction, such is the firmness and art with which this instrument has been executed. This performance is the more extraordinary when compared with the works of the artificers of Hindostan at this day, who are not under the immediate direction of a European mechanic; but arts appear to have declined equally with science in the east.

Lieut. col. Arch. Campbell, at that time (1777) chief engineer in the East India company's service at Bengal, a gentleman whose abilities do honor to his profession, made a perspective drawing of the whole apparatus that could be brought within his eye at one view; but I lament he could not represent some very large quadrants, whose radii were about twenty feet, being on the side whence he took his drawing. Their description, however, is, that they are exact quarters of circles of different radii, the largest of which I judged to be twenty feet, constructed very exactly on the sides of stone walls built perpendicular, and situated, I suppose, in the meridian of the place: a brass pin is fixed at the centre or angle of the quadrant, from which the brahmin informed me they stretched a wire to the circumference when an observation was to be made; from which it occurred to me the observer must have moved his eye up or down the circumference, by means of a ladder or some such contrivance, to raise or lower himself, till he had discovered the altitude of any of the heavenly bodies in their passage over the meridian, so expressed on the arcs of these quadrants; these arcs were very exactly divided into nine large sections; each of these again into ten, making ninety less divisions or degrees; and those also into twenty, expressing three minutes each, of about two-tenths of an inch asunder; so that it is probable, they had some method of dividing even these into more minute divisions, at the time of observation.

'My time would only permit me to take down the particular dimensions of the most capital instrument, or the greater equinoctial sun-dial, which appears to be an instrument to express solar time by the shadow of a gnomon on two quadrants, one situated to the east and the other to the west of it; and indeed the chief part of their instruments at this place appear to be constructed for the same purpose, except the quadrants, and a brass instrument described hereafter. There is another instrument for the purpose of determining the exact hour of the day by the shadow of a gnomon, which stands perpendicular to, and in the centre of, a flat circular stone, supported in an oblique situation by means of four upright stones and a cross piece; so that the shadow of the gnomon, which is a perpendicular iron rod, is thrown on the divisions of

the circle described on the face of the flat circular stone. There is also a brass circle, about two feet diameter, moving vertically on two pivots between two stone pillars, having an index or hand turning round horizontally on the centre of this circle. This instrument appears to be made for taking the angle of a star at setting or rising, or for taking the azimuth or amplitude of the sun at rising or setting. The use of another instrument I was at a loss to guess. It consists of two circular walls; the outer of which is about forty feet in diameter, and eight feet high; the wall within about half that height, and appears intended for a place to stand in to observe the divisions on the upper circle of the outer wall, rather than for any other purpose; and yet both circles are divided into 360°, each degree being subdivided into twenty small divisions, the same as the quadrants. There is a door-way to pass into the inner circle, and a pillar in the centre, of the same height with the lower circle, having a hole in it, being the centre of both circles, and seems to be a socket for an iron rod to be placed perpendicularly in it. The divisions on these, as well as all the other instruments, will bear a nice examination with a pair of compasses. There is also a smaller equinoctial sun-dial, constructed on the same principle as the large one. This observatory at Benares is said to have been built by the order of the emperor Ackbar; for, as this wise prince endeavoured to improve the arts, so he wished also to recover the sciences of Hindostan, and, therefore, directed that three such places should be erected; one at Delhi, another at Agra, and the third at Benares. Some doubts have arisen with regard to the certainty of the ancient brahmins having a knowledge in astronomy, and whether the Persians might not have introduced it into Hindostan when conquered by that people; but these doubts, I think, must vanish, when we know that the present brahmins pronounce, from the records and tables which have been handed to them by their forefathers, the approach of the eclipses of the sun and moon, and regularly as they advance give timely information to the emperor and the princes in whose dominions they reside.'—*Philosophical Transactions*, vol. lxvii. p. 598, or *Abridgment*, vol. xiv. p. 214.

Mr. Hunter's paper speaks distinctly of the same astronomer having 'bound the girdle of resolution to his soul, and constructed at Delhi several of the instruments of an observatory, such as had been formerly erected at Samarcand, agreeably to the Mussulman books.' 'Thus an accurate method,' it continues, 'of constructing an observatory was established; and the difference which had existed between the computed and observed places of the fixed stars and planets, by means of observing their mean motions and aberrations with such instruments was removed. And, in order to confirm the truth of these observations, he constructed instruments of the same kind in Suwai Jeypour, and Matra, and Benares, and Oujein.'

Father le Comte describes a very magnificent observatory, erected at Peking so far back as the thirteenth century, and furnished by the late

emperor of China with many new instruments, of which a catalogue may be found in Duhalde's China. This was at the intercession of some Jesuit missionaries, chiefly father Verbiest, whom he appointed his chief observer. The instruments are exceedingly large; but the divisions are less accurate, and, in some respects, the contrivance is less commodious than in those made in Europe at this period. The chief are, an armillary zodiacal sphere, of six Paris feet diameter; an azimuthal horizon, six feet diameter; a large quadrant six feet radius; a sextant eight feet radius; and a celestial globe, six feet diameter.

EUROPEAN OBSERVATORIES.—Copernicus is stated to have been the first European who set an instrument in the meridian: this was in the year 1540. Twenty years after William I. of Hesse furnished his observatory at *Cassel*, under the direction of Tycho Brahe and Bailly, regarded then as the first regular erection of the kind in Europe.

Tycho Brahe's own observatory, or that of Uranibourg, on the Huen Island in the Sound, was the next in order. He projected this erection for the purpose of making a new catalogue of the fixed stars; a determination to which he was induced by the appearance of a new and very bright star in Cassiopeia, which filled all Europe with astonishment and consternation. The first stone was laid in August 1576, under the immediate patronage of Frederick II. of Denmark; and it contained a noble set of instruments until the beginning of the last century. Among them was a celestial globe six feet in diameter. The whole town, however, has long since been a heap of ruins: this globe was burnt in the general conflagration of Copenhagen in 1728. His celebrated sextant has been transferred as a constellation to the heavens, and is marked sextans or sextans Uranie, under the breast of Leo.

The other European observatories we shall describe in alphabetical order, with the exception of those of our own country, which will close the article.

Avignon. Here an observatory was built by father Bonfa, so early as 1683, and it has been occupied by a succession of learned ecclesiastics, who have frequently contributed to the enlargement of astronomical science.

At *Berlin* Frederick I. of Prussia founded an observatory in 1711, under the direction of Leibnitz, president of the Royal Academy of Sciences. It is a large square tower. Here Grischow, Kies, and La Lande, made various observations. The last astronomer says that, about the year 1752, he raised enormous pillars here, to which he attached the mural quadrants, north and south. (*Memoires de l'Academie*, 1751 and 1752.) Frederick II. added a fine building, where the Academy of Sciences holds its assemblies. The late astronomer royal, M. Bode, distinguished himself as the publisher of one of the most complete celestial atlases extant, entitled *Uranographia*, which is accompanied with a well arranged catalogue and history of the stars observed here.

At *Béziers* (France) the bishop's tower was

converted to an observatory, where observations have been made by Bouillet on Saturn's ring.

Bologna observatory was erected in the palace of the Institute in 1714, by count Marsigli; pope Benedict XIV. giving the instruments. Here, it may be remembered, is the celebrated meridian line of Cassini. See *Bologna*.

At *Bourdeaux* is an observatory seventy-five feet high, and twenty feet square, situated exactly in latitude 45° , or the middle of our temperate zone. Here Turgot procured a complete set of observations to be made on the length of a pendulum vibrating seconds.

Brest has an observatory on a small scale for the naval academy; and plans have been formed for a larger edifice.

At *Bremen*, in Dr. Oller's observatory, were discovered the new planets Pallas and Vesta.

Brunswick has an observatory where the determination of the orbits of the new planets, and other valuable observations, have been made by Dr. Gauss.

Cadiz has an observatory attached to the marine academy, and furnished both with English and French instruments. The observations made here by Varilla have been published in two vols.

Carthage has also an observatory.

At *Copenhagen* an astronomical tower was built by Christian IV. in 1656, at the suggestion of Longomontanus. Mr. Bugge, formerly the astronomer here, mentions various observatories in Greenland, Iceland, and Norway, as having been at various times erected by the Danish monarchs.

At *Dantzic* a former observatory was used by Hevelius, who has described it in his *Machena Celestis*. The modern one was built in 1778.

At *Dijon* M. Necker converted the tower of the king's lodge into an observatory, where the able Bernard made numerous published observations.

Dorpat in Livonia has an observatory, under the able direction of M. Struve, which has been supplied, in the most handsome manner, with fine instruments by the emperor of Russia. M. Fraunhofer of Munich has been occupied for two years in completing, for this observatory, an achromatic telescope, fourteen feet in focal length, and with an aperture of nine inches. 'You may judge from this,' says M. Struve, in a letter to baron de Zach, 'how much our liberal government does for astronomy. Our observatory is particularly indebted to the curator of our university, M. General Comte de Lievan, who has not only provided it with every thing that is excellent and perfect in the way of instruments, but has also built a commodious house for the astronomer. He has likewise ordered a great meridian circle, similar to that of Göttingen, Munich, and Königsberg: a great repeating circle; and a universal instrument, &c., all from the manufactory of M.M. Reichenbach and Ertel of Munich.'—*Zach's Corres. Astro.* vol. viii. p. 370.

Florence has an observatory, erected by the magnificent cardinal Ximenes, which contains a quadrant by Toscanelli, the largest known, and with which he made observations to prove the secular diminution of the obliquity of the ecliptic.

tic. At his death he bequeathed the whole to the Jesuits' college. In 1772 the grand duke Leopold built an observatory, which M. Fontana superintended, and in 1786 it was furnished with several fine instruments of Ramsden's.

Göttingen observatory has long been celebrated by the labors of Mayer: it has lately been refitted with instruments under the direction of M. Gauss. See our article GÖTTINGEN. Here in 1804 the planet Juno was discovered.

Leipsic had an old tower of great firmness converted into an observatory in 1788.

At *Lilienthal*, near Bremen, is a well-furnished observatory, which was long under the direction of M. Schroeter, who has made many valuable observations on the phases of the moon and planets.

Lisbon observatory was erected by John V. in 1728, at the royal palace. In 1726 some good observations were made at another observatory here belonging to the Jesuits. Vide Philos. Trans. xxxv. A second royal observatory was constructed at the Chateau de St. George, Lisbon, in 1787, by Custodio Gomez.

At *Lyons* the college observatory was built on an eminence by Father St. Benet, and is a fine edifice.

At *Malta* was formerly the most southerly observatory in Europe, viz. in 30° lat. It was erected under the auspices of the grand master Eman. de Rohan in 1783, furnished with the best instruments, and placed under the able direction of the Chevalier d'Angos. In 1789 the valuable papers of this observatory were accidentally burnt, and the instruments greatly damaged.

The *Marseilles* observatory is chiefly famous for the observations of M. de Sylvabelle.

At *Milan* is an observatory built by the Jesuits in 1765, chiefly at the expense of father Pallavinci, under the direction of the celebrated Boscovich. The instruments were selected both in England and France, and Cesaris, Oriani, and Reggio, have been distinguished observers here.

At *Montauban* the duc de la Chappelle erected an observatory, where he made many interesting observations, particularly of the transit of Venus over the sun in 1769.

Montpelier has long had an observatory erected on one of the towers of the city. M. Ratte and M. Poitevin have here distinguished themselves.

At *Moscow*, before the conflagration, was an observatory, furnished with instruments by Cary of the Strand: whether it has survived that catastrophe we have not heard.

An observatory was built at *Nuremberg* in the year 1678, and another in 1692. M. Zimmert and M. Wuzzelbau have been able authors and accurate observers, connected with these establishments.

At *Padua* the observatory was originally a tower of the tyrant Egellin's, and contained, in the thirteenth century, the dungeons in which he placed his prisoners in the civil wars of the period. On its being converted into an observatory in the year 1769 Boscovich wrote the following lines:—

Quæ quondam infernas tarris ducebat ad umbras,
Nunc Venetus auspiciis pandit ad astra viam.

This tower to infernal realms once led below,
But now the way to heaven's bright realms doth show.

At *Palermo* an observatory has been constructed in the former palace of the viceroy. Father Piazzi collected the instruments in Paris and England in 1788 and 1789, among which are a fine transit instrument, and a complete circle, by Ramsden. The first labors of this astronomer were directed to the formation of a catalogue of stars, and, as a foundation, he chose Wollaston's catalogue, and, as his chief points of reference, Dr. Maskelyne's thirty-six stars. In the prosecution of this task he discovered, in 1801, the new planet Ceres, so named in honor of Sicily.

The *Paris* royal observatory was begun in 1667, and finished in 1672. It is 160 feet in front length, 120 broad, and ninety feet high, having a terrace at top; and cellars underneath ninety feet deep. There is said to be neither iron nor wood employed in its construction. Here was not long since an old thermometer of M. de la Hire, which stood always at the same height; thereby showing that the temperature of the place remained always the same. The mural quadrant used by La Lande here, has been, in imitation of that of Tycho Brahe, transferred to the heavens as a constellation, situated between Hercules, Bootes, and the Serpent, as the quadrans muralis, containing forty stars. New rooms and vaults have been added to this building since 1788, as well as a large transit instrument and circle by Ramsden, and three observers were established here by the unfortunate Louis XVI. On the first floor of the west tower is a geographical chart, twenty-seven feet in diameter, traced under the direction of Cassini.

'The astronomers of the academy had besides several private observatories erected in different parts of Paris,' says La Lande, 'as the royal observatory was not sufficient for all. That of M. le Monnier has been, from the year 1742, in the garden of the Capuchins. That of the marine, which Joseph de l'Isle used in 1748 at the Hotel de Clugny, where I labored during two years, is at present (1792) occupied by M. Messier. That of la Caille still exists in the Mazarin College. I, as well as M. d'Agelet, have made several observations there since his death. That of the palace of Luxembourg is above the port royal. Joseph de Lisle observed there, and I likewise occupied it for some time. That of M. Pingré at the abbey of St. Génévieve was built in 1756. There is one of M. Cagnoli's, Rue de Richlieu, which this able astronomer built at his own expense in 1785, when he still resided at Paris. The observatory of the military school, built for M. Jeaurat in 1768, was occupied afterwards by M. d'Agelet. The late M. Bergeret, receiver-general of finances, constructed in 1774, at my request, a large mural quadrant of eight English feet radius, the last and the best instrument made by the celebrated Bird, the loss of whose talents we still regret. This instrument was obtained by the military academy, as well as an excellent transit instrument, and a

parallactic telescope. M. d'Agelet made a great number of observations there from 1778 to 1785, when he left it to make a voyage round the world with la Perouse. In 1788 the changes made in the military school occasioned the demolition of this observatory; but it has been rebuilt, by my desire and care, a little more to the west, with all necessary attention and expense, so that it is the most complete observatory we have at Paris. Having received the direction of it, I began, in 1789, to make the following observations. M. le François la Lande, my relation and pupil, who is a very good astronomer, has also made a prodigious number of observations, and we observed, in 1791, more than 10,000 northern stars with excellent instruments. This work was very much wanted, and I consider it as one of the most important and difficult things that could be undertaken for astronomy.

An observatory was built in 1775 at the royal college for the use of the professor of astronomy of this celebrated school. M. Geoffroy d'Assy built, in 1788, an observatory at his house, Rue de Paradis, and it will become one of the most useful by the zeal and intelligence of M. de Lombre.

The *St. Petersburg* observatory is one of the most magnificent and well-furnished in Europe, and was an erection of the czar Peter I. shortly after his visit to England. It has three stories, and is 130 feet high. M. de l'Isle, according to La Lande, has made a number of excellent observations here.

At *Pisa* is an observatory in the form of a tower. It was erected in 1730, at the expense of the university, and supplied with beautiful apparatus made by Sisson, Short, Graham, &c. Perelli and Slope, who published an excellent collection of observations in 1789, made here for many years.

At *Rome*, cardinal Zelada, at his own expense, constructed, on the southern side of the Roman college, a fine observatory, which contains the large sector of Boscovich, and instruments by Ramsden and Dollond; the abbé Calandrelli observed here with great accuracy for many years. In different parts of Rome are several minor establishments of this kind.

At *Seeburg*, near Gotha, is one of the most complete observatories in the world. It has a large transit and two murals of eight feet radius, by Ramsden, and a circle of eight feet diameter. Baron Zach, appointed in 1788, was the first professor. In 1798 he was visited here by La Lande and all the great astronomers of Germany.

The *Stockholm* observatory was founded by the Academy of Sciences of that city, in 1746. It is situated on a hill north of the town, and has a good collection of English instruments. Wargentin and Nicarder here have been celebrated professors.

At *Strasbourg*, Brackenhofer, professor of mathematics, had an observatory over the city gates, and was succeeded by Herzenschneider.

The observatory of M. Darquier at *Toulouse*, has been distinguished by his zeal and ability. Observatories have also been built in this city by M. Gauprey and M. Bonrapos. The principal one was, in 1813, under the care of Vidal.

At *Turin*, father Beccaria erected an observatory; and in 1790 a larger one was built here by the king of Sardinia, at the Royal College of Nobles, and the care of it given to the abbé Caluso.

At *Venice* is the observatory of father Panigai, and the small one near the town by Miotti.

At *Verona* Cagnoli erected, in 1787, an observatory, furnished with the best instruments, at his own expense. He has made many accurate and important observations here on the precession of the equinoxes, and on the places of 473 northern, and twenty-eight southern stars.

The university observatory of *Vienna* was founded by the empress Maria Theresa, in the year 1755, who furnished it with many superb instruments. There is another now belonging to the academical college, which was built in 1735, and endowed by the Jesuits. It is furnished with very fine instruments by English artists, and has had a succession of very learned observers. The reputation of the university observatory was maintained for many years by the abbé Maximilian Hell, who conducted the *Vienna Ephemeris*.

The observatory at *Upsal*, built and endowed in 1739 by the king of Sweden, was first superintended by the learned Celsius, who has been followed by Hooker and Wargentin, the author of the *Tables of Jupiter's Satellites*.

At *Utrecht* an ancient tower was, in 1726, converted into an observatory. Here the celebrated Van Muschenbroek observed for many years.

At *Wilna*, in Poland, is a splendid establishment of this kind, originally built and well endowed by the countess Puzynia, a lady of considerable astronomical attainments. Being completed in 1753, the king of Poland, by letters patent, gave it the title of a Royal Observatory, and appointed the Jesuit Poezobat astronomer royal. In 1788 a second erection was added under his direction, and several new instruments, by Ramsden.

OBSERVATORIES OF GREAT BRITAIN AND IRELAND. Having supplied every part of Europe with some of the most important and accurate instruments which these erections contain, it was to be expected that within our own island some splendid and useful establishments of the same description should be found. Nor will the scientific enquirer after them be disappointed.

First in importance, perhaps, among the observatories of the world, is that of Greenwich. It was built and endowed in the year 1676, by order of king Charles II., at the instance of Sir Jonas Moore, and Sir Christopher Wren: the former being surveyor-general of the ordnance: a circumstance from which the office of astronomer royal has been placed under that department.

This observatory was at first furnished with various accurate and beautiful instruments; particularly a noble sextant of seven feet radius, with telescopic sights; and the astronomers royal have always been distinguished. The person to whom the province of observing was first committed was Mr. John Flamsteed; a man who, as Dr. Halley expresses it, seemed born for the

employment. During fourteen years he watched the motions of the planets with unwearied diligence, especially those of the moon. In 1690 having provided himself with a mural arch of near seven feet radius, made by his assistant Mr. Abraham Sharp, he began to verify his catalogue of the fixed stars (which had hitherto depended altogether on the distances measured with the sextant) after a new and very different manner, viz. by taking the meridian altitudes, and the moments of culmination, or in other words the right ascension and declination. And he was so well pleased with this instrument that he discontinued almost entirely the use of the sextant. In the space of upwards of forty years this astronomer collected an immense number of observations, which may be consulted in his *Historia Cœlestis Britannica*, published in 1725; the principal part of which is the Britannic catalogue of the fixed stars.

On his death, in 1719, Mr. Flamsteed was succeeded by Dr. Halley, and he by Dr. Bradley in 1742, and this last by Mr. Bliss in 1762.

On the demise of Mr. Bliss, in 1765, the office devolved on Dr. Nevil Maskelyne, whose valuable observations have been published, from time to time, under the direction of the Royal Society. Of these observations La Lande says, in his *Astronomy* (vol. ii. page 121), *Le recueil le plus moderne et le plus précieux de tous est celui de M. Maskelyne, astronome royal d'Angleterre, qui commence à 1765, et qui forme déjà deux volumes en folio jusqu'à 1786. La précision de ces observations est si grande, qu'on trouve souvent la même seconde pour l'ascension droite d'une planète déduite de différentes étoiles, quoiqu'on y emploie la mesure du temps.* His catalogue of fundamental stars is an invaluable treasure. These and his other numerous and various improvements in this science, made during the forty-six years he was astronomer royal, entitle him to the most distinguished rank among both critical and practical astronomers.

Dr. Maskelyne died in the spring of 1811, and was succeeded by Mr. J. Pond, F.R.S., the translator of La Place's *Exposition du Système du Monde*.

The establishment here consists of two principal buildings, one of which is the observatory, and the other the residence of the astronomer royal. The observatory is an oblong edifice, running east and west, containing four rooms, or apartments on the ground-floor. It was erected on the site of the ancient moated tower of duke Humphrey, uncle to Henry VI., and the first stone of it was laid August 10th, 1675, by Mr. Flamsteed. It is situated on the highest eminence of Greenwich Park, about 160 feet above low water mark; the soil being a flinty gravel, through which the rain soon passes, and thus the atmosphere is generally dry which contributes both to the preservation of the instruments, as well as to the uniformity of refraction.

The first, or most easterly apartment has been fitted up for the reception of a very fine transit circle, by Troughton, and a clock of great value by Hardy. The next apartment is the transit room: it has a double sloping roof, with sliding shutters, which are opened both north and south,

with great ease, by pulleys. The transit instrument, which is eight feet long, and the axis three feet, is suspended on two stone pillars. This instrument is famous as having been used by Halley Bradley, and Maskelyne. It was originally made by Bird, and has been improved by Dollond and Troughton. The astronomical or transit clock, which is attached to a stone pillar, was made by Graham, and improved by Earnshaw. The third apartment is the assistant observer's library, and the western apartment of the building is the quadrant room. Here is erected a stone pier, running north and south, to which are attached two mural quadrants, of eight feet radius each. That on the eastern face, which observes the southern meridian, was made by Bird, and the other, which observes the northern, by Graham. Suspended to the western wall is the zenith sector, with which Dr. Bradley made those observations at Kew and Wanstead, which led to the discoveries of the aberration of light, and the nutation of the earth's axis. South of the quadrant room is a wooden building for making occasional observations in any direction, where only the use of a telescope, and an accurate knowledge of the time, are required. It is furnished with sliding shutters on the roof and sides, to view any point of the hemisphere, and contains some excellent telescopes, particularly a forty-inch achromatic, with a triple object-glass, and a five feet achromatic, by Dollond; with a six-feet reflector by Dr. Herschel.

North of the observatory, and east of the house, are two small buildings, covered with hemispherical sliding domes, in each of which is an equatorial sector, by Sisson, and a clock, by Arnold. These are chiefly used for observing comets. Over the dwelling apartments is a large octagonal room, which contains a great variety of astronomical instruments, and a valuable scientific library. On the top is an excellent camera obscura. In Flamsteed's time there was a well sunk in the south-east corner of what is now the garden, for the purpose of seeing the stars in the day-time, and observing the earth's annual parallax. It was 100 feet deep, with stone stairs down to the bottom: but it has been long arched over, as the improvements in the telescope have rendered it useless.

The observations made at the Royal Observatory are not only allowed to possess an unrivalled accuracy, but have been the foundation of the most important work on practical astronomy ever published; we mean the *Nautical Almanack* which Dr. Maskelyne commenced here in 1767. Delambre, in a paper on the life and labors of Dr. Maskelyne, read before the National Institute of France, January 4th, 1813, says—'He (Dr. Maskelyne) has given a catalogue of stars, not numerous, but so accurate, as to have served, almost solely for the last thirty years, as the foundation of all astronomical researches. In short, it may be said of the four volumes of Observations which he has published, that if, by a great revolution, the science should be lost, and this collection only were saved, there would be found in it sufficient materials to construct almost an entire edifice of modern astronomy; which cannot be said of any other collection.'

The *Oxford* observatory claims, perhaps, our next attention; it was founded in 1772 by funds bequeathed by Dr. Radcliff, on a grant of land from the duke of Marlborough. Here are some very excellent telescopes and clocks, by Dr. Herschel, Dollond, and Shelton; and a fine transit instrument ten feet long, which is said to have cost 150 guineas; the zenith sector 200, and the two mural quadrants 600 guineas; it was built under the direction of Dr. Hornsby, professor of astronomy, who observed here for many years. The observations are all registered, and have consisted chiefly of the right ascensions and zenith distances of the sun, moon, planets, and fixed stars.

At *Cambridge* there have long been small observatories at Christchurch, Trinity, St. John's &c.; but the noble plan for erecting one upon a scale worthy the scientific fame of the university has been at last completed. See our article *ASTRONOMY*.

The *Portsmouth* observatory, at the Royal Marine Academy, was first erected and placed under the superintendence of Mr. Bailey, a former assistant astronomer at Greenwich, who accompanied Cook in his latter voyages. It has been particularly useful in regulating the time-keepers of vessels. *Christ's Hospital* and *Somerset House* have also observatories attached on a small scale.

The late Dr. Herschel's observatory at *Slough*; stands, perhaps, at the head of our private establishments of this kind. His larger instruments are in the open air; and the celebrated forty-foot telescope contains a mirror of a ton weight; and this great instrument, with nearly an additional ton of cases, &c., is five feet in diameter, and is managed by a very slight force. The top is suspended by ropes from very lofty ladder-work. Thus, by a system of wheels, pinions, racks, and pulleys, the motions, both horizontal and vertical, are given, and any celestial object is readily and commodiously viewed. It was finished in 1789, and on the first trial a new satellite of Saturn was discovered. The great speculum of this noble instrument is forty-nine inches and a half in diameter; its polished surface forty-eight inches,—its thickness three inches and a half, and its weight, when newly cast, 2118 lbs. The tube was thirty-nine feet four inches long, and four feet ten inches in diameter, and every part of it was made of rolled or sheet iron, united without rivets, by a species of sealing used in making the iron-funnels for stoves. The thickness of the iron was less than the thirty-sixth part of an inch, and a square foot weighed about fourteen ounces. Hence, it was so light, that a wooden one would have exceeded it in weight at least 1000 lbs. It magnifies 6450 times. La Lande speaks with great admiration of this instrument. Other telescopes of various sizes are mounted around; and two smaller ones have discovered six comets. That by which in 1781 the Dr. first saw the Georgium Sidus has been made a constellation in the heavens between Gemini, the Lynx, and Auriga, and contains eighty-one stars. In Bode's Atlas it is engraved with its apparatus, and marked 'Telescopium Herschellii.'

In addition to our memoir of this great astronomer, we may observe, that the subject of the construction of the heavens, which Dr. Herschel had made entirely his own, formed the principal topic of his later communications to the royal Society. In 1814 he published in the Transactions his *Astronomical Observations* relating to the sidereal part of the heavens, and its connexions with the nebulous part. He supposes, in this paper, that the various nebulosities which fill the heavens are condensed by attraction, and converted into stars; that stars previously formed sometimes attract nebulous matter, and increase in size, and that neighbouring stars gradually approach each other, and constitute globular clusters. This paper was followed, in 1817, by *Observations* tending to investigate the local arrangement of the Celestial Bodies in space, and to determine the extent and condition of the Milky Way; which contains much interesting discussion, and in which its author concludes, that not only our sun, but all the stars we can see with the eye, are deeply immersed in the milky way, and form a component part of that immense nebula. The last paper which Dr. Herschel wrote on this subject, and indeed the last which he communicated to the Royal Society, was entitled *Astronomical Observations and Experiments* selected for the purpose of ascertaining the relative distances of Clusters of Stars, and of investigating how far the power of our Telescopes may be expected to reach into Space, when directed to ambiguous celestial Objects. From these observations our author concludes that a star of the first magnitude would just come to be visible by the naked eye, if removed to twelve times its distance, and by the most powerful telescope hitherto constructed, if removed to 2300 times its distance. Yet such a telescope still shows stars in the milky way at the utmost limits of their visibility. This extraordinary assemblage of stars is therefore equally fathomless by our eyes and by our finest telescopes. Conceiving, however, that the united lustre of sidereal systems may reach us from a still greater distance in space, Dr. Herschel estimates their distance by the aperture of the speculum, which just resolves them into stars, and in this way he has estimated the distances of forty-seven clusters. Such clusters are again taken as connecting links with such ambiguous objects as cannot be resolved by the telescope. Resolvable clusters are actually found to put on similar appearances with inferior telescopes, and hence we may compare their distances with those of the former kind, by the same principles as those with the nearest fixed star. When objects of this kind are lost to the sight, the utmost limits of human vision seem to be obtained, and our author supposes that this must take place at about the 35,000th order of distances.

The late king's private observatory, in *Richmond* gardens, is an extremely beautiful structure, but the apparatus was originally very inferior. It was built, in 1768, by order of George III., who, it is said, made several observations here, particularly of the transit of Venus in 1769. It contains a transit instrument, zenith sector, and mural arc, with several good telescopes, especi-

ally a ten-foot reflector of Dr. Herschel's. There is also a superb equatorial on the top of the building, which has a moveable roof.

The *Scottish* observatories are not remarkable. Aberdeen, Edinburgh, and Glasgow, contain small establishments of this kind; and in the Scottish capital we observe (see our article *EDINBURGH*) a new observatory is said to have been finished since 1813. The Glasgow Macfarlane observatory is also honorable to that city.

The Irish observatories are on a more imposing scale. That at *Armagh* was founded, in 1793, by the most Rev. lord Rokeby, the primate of Ireland. On this erection and the museum connected with it he bestowed £15,000. The former stands on a hill about ninety feet above the level of the town, and surrounded by several undulating hills of about the same altitude. The building is founded on a base of limestone, and all the walls are of large hewn stone, of the most firm and substantial workmanship. The tower, which adjoins the dwelling house, contains a very fine equatorial by Troughton, fixed on a large pillar, which is raised so high that the instrument in the dome can overlook all the buildings. To the east of the house is a range of buildings for the transit room, and other astronomical purposes. The principal instruments, besides the equatorial and transit, are a ten-foot sextant by Troughton; a ten-foot reflecting telescope by Dr. Herschel; a five-foot triple object glass achromatic telescope by Dollond; and also a fine night glass upon an equatorial stand. The clocks are by Earnshaw of London, and Crossthwaite of Dublin. Liberal incomes are allowed to the principal astronomer and his assistant. The former the Rev. James Archibald Hamilton, D. D. dean of St. Coleman, Cloyne, has contributed several learned papers to the Transactions of the Royal Irish Academy, on astronomical subjects. His observations of the fixed stars are considered very accurate, and several of his declinations have been transcribed into the London Philosophical Transactions. The registered observations here are those made with the transit instrument and equatorial; and an account of the temperature and weight of the atmosphere. Of these, a series of about eighteen years is preserved. The right ascensions of the sun and moon, compared with the fixed stars, are regular and unbroken; but their north polar distances have not been so constantly taken. There belong to this establishment about twenty acres of plantation and pleasure grounds, which are open for the recreation of the inhabitants of the city.

The observatory of Trinity College, *Dublin*, was begun in the year 1783; and founded and endowed by Dr. Andrews, provost of the college. It is situated at Dunnoux, three miles from that city. The structure is elevated, and the foundation a solid rock of limestone, of several miles extent.

The building fronts the east, and the lower range of windows and doors are twenty-three in number. In the centre is a noble dome of three stories high, with a moveable roof for the equatorial instrument, which is placed upon a pillar of sixteen feet square, of the most substantial masonry, and surrounded by a circular wall, a

foot distance, that supports the moveable dome, and also the floors, which in no part touch the pillar: thus no motion of the floor or wall can be communicated to the instrument. The aperture for observation in the dome is two feet and a half wide.

On each side of the centre building are two handsome edifices, of two stories high, for the residence of the professor, and to each is attached a wing of one story only, but terminated with domes of two stories. These domes are intended for occasional observations, such as of eclipses, occultations, and comets. But the most important erection of this establishment is behind the main building, and at right angles to it, in order to obtain an uninterrupted view north and south. This is the meridian or transit room, which contains both the transit instrument and the circle. It is thirty-seven feet long, twenty-three broad, and twenty-one high. Fine pillars of Portland stone are erected for both instruments on the most firm basis, and the floor is so framed as to let all the pillars rise totally detached from it; and such was the first professor Dr. Usher's attention to extreme accuracy, that he first ascertained the pillars to be perfectly homogeneous, lest any variety in their substance might admit of a difference in their expansion or contraction by heat, cold, or other changes of atmosphere. The clocks are attached to pillars of the greatest steadiness; they were made by Arnold, who exerted his best skill, and are finished in a masterly manner: the pallets are of ruby; and all the last holes of the movement jeweled; the suspension springs are of gold, with Arnold's own five-barred pendulum, and cheeks capable of experimental adjustment, so as to make all vibrations isochronal, whatever may be the excursion of the pendulum. Around the dome is a platform commanding one of the most extensive and varied prospects that can be imagined.

OBSESSION, *n. s.* } *Lat. obsessio, obsidio.*
OBSESSIONAL, *adj.* } *alis.* The act of besieging: belonging to a siege.

OBSIDIAN, or **OBSIDIANUS LAPIS**, in the natural history of the ancients, the name of a stone which they have also described under the name of the Chian marble. It is a very smooth and hard marble, extremely difficult to cut, but capable of a fine polish; and was used among the ancient Greeks for the purpose of making reflecting mirrors. The name obsidianus seems only a false spelling of the word opsiānus, *απο το οψιανω*, from seeing the images of things in it.

OBSOLETE, *adj.* } *Lat. obsoletus.* Grown
OBSELETENESS, *n. s.* } out of fashion or use; disused.

Obsolete words may be laudably revived, when they are more sounding, or more significant than those in practice. *Dryden.*

What if there be an old dormant statue or two against him, are they not now *obsolete*? *Suiff.*

And Echo learns politely to repeat

The praise of names for ages *obsolete*. *Cowper.*

OBSOPEUS (John), a German physician, born at Brettin in the Palatinate, in 1556. He was educated at Neunhaufs, and at Heidelberg, under Zacharius Ursinus. He studied physic at Frankfort on the Maine, and, after travelling

through England and Holland, was made professor of medicine at Heidelberg. He published several works, and died in 1596, aged forty.

OSORÆUS (Simon), brother to John, born in 1575, also acquired reputation as a physician, and became professor at Heidelberg, where he published some tracts, and died in 1619, aged forty-four.

OBSTACLE, *n. s.* Fr. *obstacle*; Lat. *obstaculum*. Obstruction; hindrance; something opposed.

Conscience is a blushing shame-faced spirit,
That mutinies in a man's bosom; it fills
One full of *obstacles*. *Shakespeare. Richard III.*

If all *obstacles* were cut away,
And that my path were even to the crown,
As the right reverence and due of birth.

Shakespeare.

Disparity in age seems a greater *obstacle* to an intimate friendship than inequality of fortune. For the humours, business, and diversions, of young and old, are generally very different. *Collier.*

The thing I am most afraid of is fear; and with good reason, that passion alone being able to create and magnify *obstacles*. *Steele.*

Some conjectures about the origin of mountains and islands, I am obliged to look into that they may not remain as *obstacles* to the less skilful.

Woodward's Natural History.

What more natural and usual *obstacle* to those who take voyages, than winds and storms. *Pope.*

OBSTETRIC, *adj.* } Latin *obstetric*.
OBSTETRICAL, *n. s.* } Pertaining to, or performing, a midwife's office. *Obstetrication*, the office of a midwife.

There all the learned shall at the labour stand,
And Douglas lend his soft *obstetric* hand. *Pope.*

OBSTETRIC ART, or **OBSTETRICS**, the same with midwifery.

OBSTINATE, *adj.* } Lat. *obstinatus*. Re-
OBSTINACY, *n. s.* } solute; firm; unmoved;
OBSTINATELY, *adv.* } stubborn. 'Absolutely
OBSTINATENESS, *n. s.* } used,' says Dr. Johnson,
'it has an ill sense; relatively, it is neutral.'
Obstinacy and obstinateness (the last rarely used) signify firmness; stubbornness; pertinacity. *Obstinately* follows the meaning of obstinate.

Yield,

Except you mean with *obstinate* repulse,
To slay your sovereign. *Shakespeare.*

The queen is *obstinate*,
Stubborn to justice, apt to accuse it, and
Disdainful to be tried by't. *Id. Henry VIII.*

Chasing rather to use extremities, which might drive me to desperate *obstinacy*, than apply moderate remedies. *King Charles.*

Pembroke abhorred the war as *obstinately* as he loved hunting and hawking. *Clarendon.*

Animosity raised by such usage rendereth him invincibly *obstinate* in his conceits and courses.

Barrow.

I have known great cures done by *obstinate* resolutions of drinking no wine. *Temple.*

Her father did not fail to find,
In all she spoke, the greatness of her mind;
Yet thought she was not *obstinate* to die,
Nor deemed the death she promised was so nigh.
Dryden.

A Greek made himself their prey,
T' impose on their belief, and Troy betray;
Fixed on his aim, and *obstinately* bent
To die undaunted, or to circumvent. *Id.*

Most writers use their words loosely and uncertainly, and do not make plain and clear deductions of words one from another, which were not difficult to do, did they not find it convenient to shelter their ignorance, or *obstinacy*, under the obscurity of their terms. *Locke.*

The man resolved, and steady to his trust,
Inflexible to will, and *obstinately* just,
Can the rude rabble's influence despise.

Addison.

My spouse maintains her royal trust,
Tho' tempted chaste, and *obstinately* just.

Pope.

What crops of wit and honesty appear,
From spleen, from *obstinacy*, hate or fear. *Id.*
At twenty she mocks at the duty you taught her,
Oh what a plague is an *obstinate* daughter.

Sheridan.

OBSTREPEROUS, *adj.* } Lat. *obstreperus*.
OBSTREPEROUSLY, *adv.* } Clamorous; loud;
OBSTREPEROUSNESS, *n. s.* } noisy: the adverb and noun-substantive correspond.

These *obstreperous* scepticks are the bane of divinity, who are so full of the spirit of contradiction, that they raise daily new disputes. *Howel.*

These *obstreperous* villains shout, and know not for what they make a noise. *Dryden.*

The players do not only connive at his *obstreperous* approbation, but repair at their own cost whatever damages he makes. *Addison.*

OBSTRUCTION, *n. s.* Lat. *obstructus*. Obligation; bond.

He hath full right to exempt
Whom so it pleases him by choice,
From national *obstruction*. *Milton.*

OBSTRUCT, *v. a.* } Latin *obstruo*.
OBSTRUCTER, *n. s.* } Strictly to stop
OBSTRUCTION, } up by building
OBSTRUCTIVE, *adj. & n. s.* } against; to block
OBSTRUCTENT. } up; bar; barrier.

Obstruct; oppose; retard: an obstructer is he who hinders or opposes: obstruction, the act of hindering, opposing, or impeding; also the hindrance; obstacle; impediment; Shakespeare has used it for any thing heaped together: obstructive and obstruct mean, causing hindrance; blocking up.

Aye, but to die, and go we know not where;
To lie in cold *obstruction*, and to rot;
This sensible warm motion to become
A kneaded clod.

Shakespeare. Measure for Measure.

All *obstructions* in parliament, that is, all freedom in differing in votes, and debating matters with reason and candour, must be taken away.

King Charles.

Having thus separated this doctrine of God's pre-determining all events from three other things confounded with it, it will now be discernible how noxious and *obstructive* this doctrine is to the super-structing all good life. *Hammond.*

The second *obstructive* is that of the fiduciary, that faith is the only instrument of his justification, and excludes good works from contributing any thing toward it. *Id.*

In his winter-quarters the king expected to meet with all the *obstructions* and difficulties his enraged enemies could lay in his way. *Clarendon.*

Sure God by these discoveries did design
That his clear light thro' all the world should shine;
But the *obstruction* from that discord springs,
The prince of darkness makes 'twixt Christian kings.

Denham.

No cloud interposed,

Or star to obstruct his sight. *Milton.*

They who think too well of their own performances are apt to boast in their preface how little time their works have cost them, and what a number of *obstructions* they have met with. *Dryden.*

Roughly handling is apt to defeat or obstruct the cure. *Barrow.*

In their passage through the glands in the lungs, they obstruct and swell them with little tumours. *Blackmore.*

Fat people are subject to weakness in fevers, because the fat, melted by feverish heat, obstructs the small canals. *Arbuthnot.*

Obstruction denotes the blocking up of any canal in the human body, so as to prevent the flowing of any fluid through it, on account of the increased bulk of that fluid, in proportion to the diameter of the vessel. *Quincy.*

Whenever a popular assembly, free from obstructions, and already possessed of more power than an equal balance will allow, shall continue to think that they have not enough, I cannot see how the same causes can produce different effects among us, from what they did in Greece and Rome. *Swift.*

I would recommend our rising actresses never to take notice of the audience, let the spectators applaud ever so loudly, except at the end of the epilogue for mere obstructions. *Goldsmith.*

A transition from an author's book to his conversation is too like the entrance into a large city. Remotely we see nothing but spires of temples and turrets of palaces, but, when we have entered, we find it perplexed with passages, disgraced with despicable cottages, embarrassed with obstructions, and clouded with smoke. *Johnson.*

OBSTUPEFACTION, *n. s.* } *Lat. obstupe-*
OBSTUPEFACTIVE, *adj.* } *facio. Stupid-*
ity; the act of inducing stupidity; stupefying. *the force of it is obstupefactive, and no other.* *Abbot.*

OBTAIN, *v. a. & v. n.* } *Fr. obtenir; Lat.*
OBTAIN'ABLE, *adj.* } *obtineo. To acquire;*
OBTAIN'ER, *n. s.* } *procure; gain: as a*
neuter verb, to be or continue in use; be established; prevail: obtainable is, procurable; to be gained: obtainer, he who obtains. *Abbot.*

May be that I may obtain children by her. *Genesis.*
We have obtained an inheritance. *Ephes. i. 11.*

By his own blood he entered in once into the holy place, having obtained eternal redemption for us. *Hebrews ix. 12.*

In such our prayers cannot serve us as means to obtain the thing we desire. *Hooker.*

If they could not be obtained of the proud tyrant, then to conclude peace with him upon any conditions. *Knolles.*

There is due from the judge to the advocate some commendation, where causes are fairly pleaded; especially towards the side which obtaineth not. *Bacon.*

The conclusion of the story I forbore, because I could not obtain from myself to shew Absalom unfortunate. *Dryden.*

Our impious use no longer shall obtain,
Brothers no more by brothers shall be slain. *Id.*

Whatever once is denied them, they are certainly not to obtain by crying. *Locke on Education.*

What thinks he of his redemption, and the rate it cost, not being obtainable unless God's only Son would come down from heaven, and be made man, and pay down his own life for it? *Kettlewell.*

The Theodosian code, several hundred years after Justinian's time, did obtain in the western parts of Europe. *Baker.*

Where wasting the publick treasure has obtained in a court, all good order is banished. *Davenant.*

The situation of the sun and earth, which the theorist supposes is so far from being preferable to this which at presents obtains, that this hath infinitely the advantage of it. *Woodward.*

The juices of the leaves are obtained by expression. *Arbuthnot.*

Spirits which come over in distillations, miscible with water, and wholly combustible, are obtainable from plants by previous fermentation. *Id.*

The general laws of fluidity, elasticity, and gravity, obtain in animal and inanimate tubes. *Chayne.*

OBTEND', *v. a.* } *Lat. obtendo. To oppose;*

OBTEN'SION, *n. s.* } *propose; offer as a reason.*

Thou dost with lies the throne invade,
Obtending Heaven for whate'er ills befall. *Dryden.*

OBTENEBRATION, *n. s.* } *Lat. ob and tene-*
bra, darkness. The state of being in the dark; the act of darkening; darkness; cloudiness.

In every meagrim or vertigo there is an obtenebration joined with a semblance of turning round. *Bacon.*

OBTEST', *v. a.* } *Lat. obtestor. To beseech;*

OBTES'TATION. } *supplicate.*

Suppliants demand

A truce, with olive branches in their hand;

Obtest his clemency, and from the plain

Beg leave to draw the bodies of their slain. *Dryden.*

OBTRUDE', *v. a.* } *Lat. obtrudo. To thrust*
OBTRU'DER, *n. s.* } *or force upon; hence,*
OBTRU'SION, } *thrust into any place;*
OBTRU'SIVE, *adj.* } *impose one's company;*
urge or offer with unreasonable eagerness: the obtruder is he who obtrudes: obtrusion, the act or instance of obtruding: obtrusive, disposed to obtrude or intrude.

It is their torment that the thing they shun doth follow them, truth, as it were, even obtruding itself into their knowledge, and not permitting them to be so ignorant as they would be. *Hooker.*

There may be as great a vanity in retiring and withdrawing men's conceits from the world as in obtruding them. *Bacon.*

Some things are easily granted; the rest ought not to be obtruded upon me with the point of the sword. *King Charles.*

Who can abide that against their own doctors six books should, by their fatherhoods of Trent, be, under pain of a curse, imperiously obtruded upon God and his church? *Hall.*

Why shouldst thou then obtrude this diligence in vain, where no acceptance it can find? *Milton.*

Whatever was not by them thought necessary, must not by us be obtruded on, or forced into that catalogue. *Hammond.*

Do justice to the inventors or publishers of the true experiments, as well as upon the obtruders of false ones. *Boyle.*

A cause of common error is the credulity of men; that is, an easy assent to what is obtruded, or believing at first ear what is delivered by others. *Browne.*

The objects of our senses obtrude their particular ideas upon our minds, whether we will or no; and the operations of our minds will not let us be without some obscure notions of them. *Locke.*

Whether thy great forefathers came
From realms that bear Vespucio's name;
For so conjectures would *obtrude*,
And from thy painted skin conclude. *Swift*.
This thing of rhyme I ne'er disdain'd to own,
Though not *obtrusive*, yet not quite unknown.

Byron.

OBTUND', *v. a.* Lat. *obtundo*. To blunt;
dull; quell.

Avicen countermands letting blood in cholerick
bodies, because he esteems the blood a bridle of
gall, *obtusand* its acrimony, and fierceness.

Harvey.

The most pertinacious and vehement demonstrator
may be wearied, in time, by continual negation, and
incredulity, which an old poet, in his address to Ra-
leigh, calls 'the wit of fools,' *obtunds* the argu-
ments which it cannot answer, as woofsacks deaden
arrows, though they cannot repel them. *Johnson*.

OBTUSE', *adj.* Lat. *obtusus*. Blunt or
OBTUSANGULAR, broken at the point; not
OBTUSELY, acutely pointed; hence
OBTUSENESS, dull; stupid: obtusangular,
OBTUSION, having an angle or angles
larger than a right angle: obtusely, without
point; stupidly: obtuseness and obtusion, the
act of dulling or blunting, or state of being
dulled or stupid.

Thy senses then

Obtuse, all taste of pleasures must forego.

Milton.

Obtusion of the senses, internal and external.

Harvey.

A national taste cannot be wholly changed at
once; we must yield a little to men's *obtus* minds and
we may then bring them by degrees to adopt what
would offend them if attempted to be introduced by
violence. *Sir J. Reynolds*.

OBVENTION, *n. s.* Lat. *obvenio*. Acci-
dental advantage.

When the country grows more rich, and better in-
habited, the tythes and other *obventions* will also be
more augmented and better valued. *Spenser*.

OBVERT'. Lat. *obverso*. To turn towards.

The laborant with an iron rod stirred the kindled
part of the nitre, that the fire might be more dif-
fused, and more parts might be *obverted* to the air.

Boyle.

A man can from no place behold, but there will
be amongst innumerable superficials, that look some
one way, and some another, enough of them *ob-*
verted to his eye to afford a confused idea of light.

Boyle on Colours.

An erect cone placed in an horizontal plane, at a
great distance from the eye, we judge to be nothing
but a flat circle, if its base be *obverted* towards us.

Watts's Logick.

OBVIATE, *v. a.* } Fr. *obvier*; Lat. *ob-*
OBVIOUS, *adj.* } *vis*. To meet as in the
OBVIOUSLY, *adv.* } way, i. e. contra viam; to
OBVIOUSNESS, *n. s.* } intercept; obvious is
meeting; opposed in front or openly; exposed:
hence easily discovered; plain; evident; natu-
ral: the other words follow these senses.

For France, Spain, and other foreign countries,
the volumes of their laws and lawyers have *obviously*
particulars concerning place and precedence of their
magistrates and dignities. *Selden*.

I to the evil turn

My *obvious* breast; arming to overcome

By suffering, and earn rest from labour won.

Milton.

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Whether such room in nature unpossess
Only to shine, yet scarce to contribute
Each orb a glimpse of light, conveyed so far
Down to this habitable, which returns
Light back to them, is *obvious* to dispute. *Id.*
It is *obvious* to discover that imperfections of one
kind, have a visible tendency to produce perfections
of another. *Shenstone*.

Slight experiments are more easily and cheaply
tried; I thought their easiness or *obviousness* fitter to
recommend than depreciate them. *Boyle*.

They are such lights as are only *obvious* to every
man of sense, who loves poetry and understands it.
Dryden.

All purely identical propositions *obviously* and at
first blush contain no instruction. *Locke*.

To lay down every thing in its full light, so as to
obviate all exceptions, and remove every difficulty,
would carry me out too far. *Woodward*.

We may then more *obviously*, yet truly liken the
civil state to bulwarks, and the church to a city.

Holyday.

These sentiments, whether they be impressed on
the soul, or arise as *obvious* reflections of our reason,
I call natural, because they have been found in all
ages. *Rogers*.

All the great lines of our duty are clear and *ob-*
vious; the extent, of it understood, the obligation
acknowledged, and the wisdom of complying with it
freely confessed. *Id.*

I am apt to think many words difficult or obscure,
which are *obvious* to scholars. *Swift*.

Yet how fallacious is all earthly bliss,

What *obvious* truths the wisest hands may miss:

Some pleasures live a month, and some a year,

But short the date of all we gather here;

No happiness is felt, except the true,

That does not charm the more for being new.

Cowper.

OBUMBRATE, *v. a.* Lat. *obumbro*. To
shade; to cloud.

The rays of royal majesty, reverberated so strongly
upon Villorio, dispelled all those clouds which did
hang over and *obumbrate* him. *Howel*.

OBY, or OUBY, an island of the eastern seas,
seems to be a continuation of the chain of Xulla.
The Dutch have, on the west end, a small fort;
and the sultan of Bachian, who claims the sove-
reignty, has a pearl fishery here. Farther north
is the island Mya, formerly well inhabited, and
abounding in clove trees, but which have been
all rooted out. It is of middling height, and
has a good road: clove trees are said to flourish.
Tyfoa Island, north-west of it, is low. Oby Pulo,
is five leagues south of Cambodia Point, in the
east of the Gulf of Siam. It is an island some
miles in extent, and formed of several hills, the
centre one rising to a height to be seen eighteen
leagues. The inhabitants are a few banished
families from the main, who cultivate rice and
maize enough for their subsistence. A stream
of fine water descends from the great mountain,
and empties itself into the sea on the north, where
100 butts of water may be filled in a day. As
water is in the dry season very scarce on the op-
posite coast, a number of junks are kept con-
stantly employed in supplying it from this
stream.

OCANA, an old town of Spain, the capital of
the lower district of la Mancha, situated at the
entrance of a fine plain: but the favorable im-
pression produced at first by groupes of steeples

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and some large buildings, is entirely destroyed on entering the town, which is in a state of complete decay. It has four churches, and eleven religious houses; but its chief ornaments are two beautiful fountains. The inhabitants, about 5000, manufacture silk, leather, and soap. The vicinity was, on 20th November 1810, the scene of a general action between the French and Spaniards. Eight miles E. S. E. of Aranjuez, and thirty S. S. E. of Madrid.

OCATAHOOLA, a river of the United States, in Louisiana. It runs S. S. E. through the greatest part of its course; then east, passing through a lake of the same name, and joining the Ouachitta at the junction of the Tensaw.

OCCA'SION, *n. s. & v. a.* Fr. *occasion*; OCCA'SIONAL, *adj.* Lat. *occasio*. Sea-son; opportunity; OCCA'SIONALLY, *adv.* incident; OCCA'SIONER, *n. s.* convenience; accidental cause, or reason; casual need: to occasion is to cause accidentally; produce without design, or not by direct design or influence: occasional is casual; incidental; produced by accident or exigence: occasionally and occasioner, corresponding in sense.

Because of the money returned in our sacks are we brought in, that he may seek *occasion* to fall upon us, and take us for bondmen. Gen. xliii. 18.

Use not liberty for an *occasion*. Gal. v. 13.

She with true lamentations made known to the world, that her new greatness did no way comfort her in respect of her brother's loss, whom she studied all means possible to revenge upon every one of the *occasioners*. Sidney.

Me unwetting, and unaware of such mishap, She brought to mischief through *occasion*, Where this same wicked villain did me light upon. Spenser.

Have you ever heard what was the *occasion* and first beginning of this custom? Spenser on Ireland.

The laws of Christ we find rather mentioned by *occasion* in the writings of the apostles, than any solemn thing directly written to comprehend them in legal sort. Hooker.

My *occasions* have found time to use them toward a supply of money. Shakspeare.

Your business calls on you,

And you embrace the *occasion* to depart. Id.

That woman that cannot make her fault her husband's *occasion*, let her never nurse her child herself, for she will breed it like a fool. Id.

Some men will load me as if I were a wilful and resolved *occasioner* of my own and my subjects' miseries. King Charles.

Authority and reason op her wait,

As one intended first, not after made

Occasionally. Milton's *Paradise Lost*.

Let me not let pass

Occasion which now smiles. Id.

In case a man dig a pit and leave it open, whereby it happeneth his neighbour's beast to fall thereinto and perish, the owner of the pit is to make it good, inasmuch as he was the *occasioner* of that loss to his neighbour. Sanderson.

The ground or *occasional* original hereof, was the amazement and sudden silence the unexpected appearance of wolves does often put upon travellers. Browne's *Vulgar Errors*.

With a mind as great as theirs he came

To find at home *occasion* for his fame,

Where dark confusions did the nations hide. Waller.

I doubt not whether the great increase of that disease may not have been *occasioned* by the custom of much wine introduced into our common tables. Temple.

The fair for whom they strove,
Nor thought when she beheld the fight from far,
Her beauty was the *occasion* of the war. Dryden.

They who are desirous of a name in painting, should read with diligence, and make their observations of such things as they find for their purpose, and of which they may have *occasion*. Id.

Those letters were not writ to all;
Nor first intended but *occasional*,
Their absent sermons.

Id. *Hind and Panther*.

If we enquire what it is that *occasions* men to make several combinations of simple ideas into distinct modes, and neglect others which have as much an aptness to be combined, we shall find the reason to be the end of language. Locke.

Who can find it reasonable that the soul should, in its retirement, during sleep, never light on any of those ideas it borrowed, not from sensation, preserve the memory of no ideas but such, which, being *occasioned* from the body, must needs be less natural to a spirit? Id.

From this admonition they took only *occasion* to redouble their fault, and to sleep again. South.

Thus much is sufficient out of scripture, to verify our explication of the deluge, and according to the Mosaical history of the flood, according to many *occasional* reflections dispersed in other places of scripture concerning it. Burnet.

The ancient canons were very well fitted for the *occasion* of the church in its purer ages. Baker.

A consumption may be *occasioned* by running sores, or sinuous fistulas, whose secret caves and winding burrows empty themselves by copious discharges. Blackmore.

The good Psalmist condemns the foolish thoughts, which a reflection on the prosperous state of his affairs had sometimes *occasioned* in him. Atterbury.

This one has *occasion* of observing more than once in several fragments of antiquity, that are still to be seen in Rome. Addison.

Besides these constant times there are likewise *occasional* times for the performance of this duty. Duty of Man.

I have endeavoured to interweave with the assertions some of the proofs whereon they depend, and *occasionally* scatter several of the more important observations throughout the work. Woodward.

By its stypitic quality it affects the nerves, very often *occasioning* tremors. Arbuthnot on *Aliments*.

A prudent chief not always must display,
His powers in equal ranks, and fair array,
But with the *occasion* and the place comply,
Conceal his force, nay, seem sometimes to fly. Pope.

God hath put us into an imperfect state, where we have perpetual *occasion* of each other's assistance. Srijl.

Love or of force or of persuasion
Avails him as best suits the *occasion*,
And all who've felt his tingling dart
Will own his conquest o'er the heart. Sheridan.

OCCECATION, *n. s.* Lat. *occacatio*, from *occaco*. The act of blinding or making blind.

Those places speak of obduration and *occacation*, so as if the blindness that is in the minds, and hardness that is in the hearts of wicked men, were from God. Sanderson.

OCCIDENT, *n. s.* } Lat. *occidens*, *occiden-*
OCCIDENTAL, *adj.* } *talis*. The west ; west-
OCCIDUOUS. } ern.

The envious clouds are bent
 To dim his glory, and to stain the tract
 Of his bright passage to the *occident*.

Shakespeare.

Ere twice in muck and *occidental* damp,
 Moist Hesperus hath quenched his sleepy lamp.

Id.

If she had not been drained she might have tiled
 her palaces with *occidental* gold and silver. *Howel.*

East and west have been the obvious conceptions
 of philosophers, magnifying the condition of India
 above the settling and *occidental* climates. *Brown.*

OCCIPUT, *n. s.* } Lat. *occiput*, *occipitalis*.
OCCIPITAL, *adj.* } The back of the head ;
 pertaining to or placed in the back of the head.
 His broad-brimmed hat

Hangs o'er his *occiput* most quaintly,
 To make the knave appear more saintly.

Butler.

OCCIPUT, in anatomy, os memoriz, os nervo-
 rum, or os basuare, the name given to that bone
 which forms the posterior and inferior part of
 the skull. It is of an irregular figure, convex on
 the outside, and concave internally. Its external
 surface is very irregular, and thus serves for the
 attachment of several muscles. The inferior
 portion of the bone is stretched forward in form
 of a wedge, whence it is called the cuneiform,
 or basiliary process. At the base of this process,
 situated obliquely on each side of the foramen
 magnum, are two flat oblong protuberances,
 named condyles. They are covered with cartil-
 age, and serve for the articulation of the head
 with the first vertebra of the neck. At the basis
 of the cranium, and immediately behind the
 cuneiform process, there is a considerable hole,
 through which the medulla oblongata, the nervi
 accessorii, and the vertebral arteries, pass into the
 spine. Man being designed for an erect posture,
 this foramen magnum is found nearly in the
 middle of the basis of the human cranium, and
 at a pretty equal distance from the posterior
 part of the occiput, and the anterior part of the
 lower jaw ; whereas in quadrupeds it is nearer
 the back part of the occiput.

This bone is thicker and stronger than any
 other of the bones of the head, except the petrous
 parts of the ossa temporum. The reason for this
 seems to be that it covers the cerebellum, in
 which any wound is of the utmost consequence,
 and that it is, by its situation, more liable to be
 fractured by falls than any other bone of the
 cranium. For if we fall forwards the hands are
 naturally put out to prevent the forehead's touch-
 ing the ground ; and if on one side the shoulders
 in a great measure protect the sides of the head ;
 but if a person falls backwards the hind part of
 the head consequently strikes against the earth,
 and that too with considerable violence. Nature
 therefore has wisely constructed this bone so as
 to be capable of the greatest strength at its upper
 part, where it is most exposed to injury. See

ANATOMY, Index.

OCCLUDE, *v. a.* } Lat. *occludo*. To en-
OCCLUSE, *adj.* } close ; shut up : occlude
OCCLUSION, *n. s.* } is enclosed : occlusion,
 the act of shutting up

They take it up, and roll it upon the earths,
 whereby *occluding* the pores they conserve the natural
 humidity, and so prevent corruption. *Brown.*

The appulse is either plenary and *occlusus*, so as to
 preclude all passages of breath or voice through the
 mouth ; or else partial and pervious, so as to give
 them some passages out of the mouth. *Holder.*

OCCOA, a river of Hispaniola, which runs
 into the sea, and forms a bay on the south coast,
 to which it gives name, west of Point Salinas.

OCCOA, a bay at the eastern extremity of the
 island of Cuba.

OCCULT, *adj.* } Fr. *oculte* ; Lat. *oc-*
OCCULTATION, *n. s.* } *cultus*. Obscure ; se-
OCCULTNESS. } cret ; hidden ; un-

known : occultation, in astronomy, is the time
 that a star or planet is hid from our sight by the
 interposition of the body of the moon, or some
 other planet : occultness, secretness ; the state of
 being hid.

If this *occult* guilt

Do not itself unkennel in one speech,
 It is a damned ghost that we have seen.

Shakespeare.

An artist will play a lesson on an instrument
 without minding a stroke ; and our tongues will run
 divisions in a tune not missing a note, even when our
 thoughts are totally engaged elsewhere : which ef-
 fects are to be attributed to some secret act of the
 soul, which to us is utterly *occult*, and without the
 ken of our intellects. *Glanville.*

These instincts we call *occult* qualities ; which is
 all one with saying that we do not understand how
 they work. *L'Estrange.*

These are manifest qualities, and their causes only
 are *occult*. And the Aristotelians give the name of
occult qualities not to manifest qualities, but to such
 qualities only as they suppose to lie hid in bodies,
 and to be the unknown causes of manifest effects.

Newton's Opticks.

OCCUPANCY, *n. s.* } Lat. *occupo*. The
OCCUPANT, } act of taking or keep-
OCCUPATE, *v. a.* } ing possession : an
OCCUPATION, *n. s.* } occupant is he who
OCCUPIER, } takes or keeps pos-
OCCUPY, *v. a. & v. n.* } session : occupy, to
 possess ; hold : occupation, the act of taking or
 holding possession : hence employment ; busi-
 ness ; avocation : an occupier is a possessor ;
 one who follows any employment or calling : to
 occupy, to possess ; keep ; hold ; take up ; give
 employment to ; follow as a business ; use ;
 spend ; apply.

All the gold *occupied* for the work was twenty and
 nine talents. *Exod. xxxviii. 2.*

Thy merchandise and the *occupiers* of thy mer-
 chandise shall fall into the midst of the seas.

Ezek. xxvii. 27.

He called his ten servants, and delivered them ten
 pounds, and said unto them, *Occupy* till I come.

Luke xix. 13.

He was of the same craft with them, and wrought,
 for by their *occupation* they were tent-makers. *Acts.*

How shall he that *occupieth* the room of the un-
 learned say Amen at thy giving of thanks, seeing he
 understandeth not what thou sayest ?

1 Corinthians.

They *occupied* themselves about the sabbath yield-
 ing exceeding praise to the Lord. *2 Maccabees.*

How can he get wisdom that driveth oxen and is
occupied in their labour, and whose talk is of bul-
 locks ? *Ecclesi. xxxviii. 25.*

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An archbishop may have cause to *occupy* more chaplains than six.

Act of Henry VIII.

They *occupy* their business in deep waters.

Common Prayer.

The red pestilence strikes all trades in Rome, And *occupations* perish.

Shakespeare. Coriolanus.

If the title of *occupiers* be good in a land unpeopled, why should it be bad accounted in a country peopled thinly?

Raleigh.

Of beasts and birds the property passeth with the possession, and goeth to the *occupant*; but of civil people not so.

Bacon.

Drunken men are taken with a plain destitution in voluntary motion; for that the spirits of the wine oppress the spirits animal, and *occupate* part of the place where they are, and so make them weak to move.

Id. Natural History.

Spain hath enlarged the bounds of its crown within this last sixscore years much more than the Ottomans; I speak not of matches or unions, but of arms, *occupations*, invasions.

Bacon.

My *occupations* must vary according to occasions. My end shall be one, and the same now on earth that it must be one day in heaven.

Hall.

In your most busy *occupations*, when you are never so much taken up with other affairs, yet now and then send up an ejaculation to the God of your salvation.

Wake.

Powder being suddenly fired altogether, upon this high rarefaction, requireth a greater space than before its body *occupied*.

Browne.

He must assert infinite generations before that first deluge; and then the earth could not receive them, but the infinite bodies of men must *occupy* an infinite space.

Bentley's Sermons.

Of moveables, some are things natural; others, things artificial. Property in the first is gained by *occupancy*, in the latter by improvement.

Warburton.

Such were the distresses of the then infant world, so incessant their *occupations* about provision for food, that there was little leisure to commit any thing to writing.

Woodward.

There was deep silence in the chamber: dim

And distant from each other burned the lights, And slumber hovered o'er each lovely limb

Of the fair *occupants*.

Byron.

OCCUPANCY, in law, is the taking possession of those things which before belonged to nobody. This, says judge Blackstone, is the true ground and foundation of all property, or holding those things in severalty, which, by the law of nature, unqualified by that of society, were common to all mankind. But, when once it was agreed that every thing capable of ownership should have an owner, reason suggested that he who could first declare his intention of appropriating any thing to his own use, and, in consequence of such his intention, actually took it into possession, should thereby gain the absolute property of it; according to that rule of the law of nations, recognised by the laws of Rome, *Quod nullius est, id ratione naturali occupanti conceditur*. This right of occupancy, so far as it concerns real property, has been confined by the laws of England within a very narrow compass: and was extended only to a single instance; namely, where a man was tenant pour autre vie, or had an estate granted to himself only for the life of another man, and died during the life of cestuy que vie, or him by whose life it was holden: in this case he that could first enter on the land might law-

fully retain the possession so long as cestuy que vie lived by right of occupancy. This seems to have been recurring to first principles, and calling in the law of nature to ascertain the property of the land when left without a legal owner. For it did not revert to the grantor, who had parted with all his interest, so long as cestuy que vie lived; it did not escheat to the lord of the fee, for all escheats must be of the absolute entire fee, and not of any particular estate carved out of it, much less of so minute a remnant as this; it did not belong to the grantee, for he was dead; it did not descend to his heirs, for there were no words of inheritance in the grant; nor could it vest in his executors, for no executors could succeed to a freehold. Belonging therefore to nobody, like the *hereditas jacens* of the Romans, the law left it open to be seized and appropriated by the first person that could enter upon it, during the life of the cestuy que vie, under the name of an occupant. But there was no right of occupancy allowed where the king had the reversion of the lands; for the reversioner has an equal right with any other man to enter upon the vacant possession; and, where the king's title and a subject's interfere, the king's shall always be preferred. Against the king, therefore, there could be no prior occupant, because *nullum tempus occurrit regi*. And, even in the case of a subject, had the estate pour autre vie been granted to a man and his heirs during the life of cestuy que vie, there the heir might, and still may, enter and hold possession, and is called in law a special occupant; as having a special exclusive right, by the terms of the original grant, to enter upon and occupy this *hereditas jacens*, during the residue of the estate granted; though some have thought that such estate is rather a descendible freehold. But the title of common occupancy is now reduced almost to nothing by two statutes; the one 29 Car. II. c. 3, which enacts that where there is no special occupant, in whom the estate may vest, the tenant pour autre vie may devise it by will, or it shall go to the executors, and be assets in their hands for payment of debts; the other, that of 14 Geo. II. c. 20, which enacts that it shall vest not only in the executors, but, in case the tenant dies intestate, in the administrators also; and go in course of a distribution like a chattel interest. By these two statutes the title of common occupancy is utterly extinct and abolished: though that of special occupancy, by the heir at law, continues to this day: such heir being held to succeed to the ancestor's estate, not by descent, for then he must take an estate of inheritance, but as an occupant, specially marked out and appointed by the original grant. For the statutes must not be construed so as to create any new estate, or to keep that alive which, by the common law, was determined, and thereby to defeat the grantor's reversion; but merely to dispose of an interest in being, to which by law there was no owner, and which therefore was left open to the first occupant. When there is a residue left the statutes give it to the executors, &c., instead of the first occupant; but they will not create a residue on purpose to give it to the executors. So also, in some cases, where the laws of other nations give

a right by occupancy, as in lands newly created, by the rising of an island in a river, or by the alluvion or dereliction of the sea; in these instances the law of England assigns them an immediate owner. For Bracton tells us that if an island arise in the middle of a river it belongs in common to those who have lands on each side thereof; but, if it be nearer to one bank than the other, it belongs only to him who is proprietor of the nearest shore; which is agreeable to the civil law. Yet this seems only to be reasonable where the soil of the river is equally divided between the owners of the opposite shores; for if the whole soil is the freehold of any one, as it must be whenever a several fishery is claimed, there it seems just (and so is the practice) that the islets arising in any part of the river shall be the property of him who owneth the piscary and the soil. However in case a new island arise in the sea, though the civil law gives it to the first occupant, yet ours gives it to the king. And as to lands gained from the sea, either by alluvion, by the washing up of sand and earth, so as in time to make terra firma; or by dereliction, as when the sea shrinks back below the usual water-mark; in these cases the law is held to be, that if this gain be by little and little, by small and imperceptible degrees, it shall go to the owner of the land adjoining. For *de minimis non curat lex*: and besides, these owners being often losers by the breaking in of the sea, or at charges to keep it out, this possible gain is therefore a reciprocal consideration for such possible charge or loss. But, if the alluvion or dereliction be sudden and considerable, in this case it belongs to the king; for as the king is lord of the sea, and so owner of the soil while it is covered with water, it is but reasonable he should have the soil when the water has left it dry. So that the quantity of ground gained, and the time during which it is gained, are what make it either the king's or the subject's property. In the same manner, if a river, running between two lordships, by degrees gains upon one, and thereby leaves the other dry; the owner who loses his land thus imperceptibly has no remedy; but if the course of the river be changed by a sudden and violent flood, or other hasty means, and thereby a man loses his ground, he shall have what the river has left in any other place as a recompense for this sudden loss. And this law of alluvions and derelictions with regard to rivers is nearly the same in the imperial law; whence indeed those our determinations seem to have been drawn and adopted: but we ourselves, as islanders, have applied them to marine increases, and have given our sovereign the prerogative he enjoys, as well upon the particular reasons before-mentioned as upon this other general ground of prerogative, formerly remarked, that whatever has no other owner is vested by the law in the king. See *PREROGATIVE*.

OCCUR, *v. n.* } Lat. *occurro*; Fr. *occurrence*. To come to meet.
OCCURRENCE, *n. s.* } *currance*. To come to meet.
OCCURRENT, *adj.* } mory; appear here and there; clash; strike
OCCURSION, *n. s.* } against; intercept: occurrence (from the Fr.) is, incident; accidental event: occurrent, incident: occursion, accidental blow; clash.

Contentions were as yet never able to prevent two evils, the one a mutual exchange of unseemly and unjust disgraces, the other a common hazard of both, to be made a prey by such as study how to work upon all *occurrences*, with most advantage in private.

Hooker.

He did himself certify all the news and *occurrences* in every particular, from Calice, to the mayor and aldermen of London.

Bacon.

There doth not occur to me any use of this experiment for profit.

Id. *Natural History*.

So pleasing is the vicissitude of things that the intercourse even of those *occurrences* which in their own nature are less worthy, gives more contentment than the unaltered estate of better.

Bp. Hall.

In the resolution of bodies, by fire, some of the dissipated parts may, by their various *occursion* occasioned by the heat, stick closely.

Boyle.

Now should those active particles, ever and anon justled by the *occursion* of other bodies, so orderly keep their cells without alteration of site.

Glanville.

In education most time is to be bestowed on that which is of the greatest consequence in the ordinary course and *occurrences* of that life the young man is designed for.

Locke.

The mind should be always ready to turn itself to the variety of objects that *occur*, and allow them as much consideration as shall be thought fit.

Id.

Bodies have a determinate motion according to the degrees of their external impulse, their inward principle of gravitation, and the resistance of the bodies they *occur* with.

Bentley.

Before I begin that, I must *occur* to one specious objection against this proposition.

Id.

Voyages detain the mind by the perpetual *occurrence* and expectation of something new.

Watts.

The far greater part of the examples that *occur* to us are so many encouragements to vice and disobedience.

Rogers.

OCEAN, *n. s. & adj.* } Fr. *ocean*; Lat. *oceanus*.
OCEANIC. } *amus*. The main sea;
 any great expanse: ocean is classically used by Milton in the sense of oceanic, i. e. pertaining to the ocean.

The golden sun salutes the morn,
 And, having gilt the ocean with his beams,
 Gallops the zodiack. *Shakspeare*.
 Will all great Neptune's ocean wash this blood
 Clean from my hand? *Id. Macbeth*.

In bulk as huge as that sea-beast,
 Leviathan, which God of all his works
 Created hugest that swims the' ocean stream.

Milton.

Bounds were set

To darkness, such as bound the ocean wave. *Id.*
 Time, in general, is to duration, as place to expansion. They are so much of those boundless oceans of eternity and immensity, as is set out and distinguished from the rest, to denote the position of infinite real beings, in those uniform, infinite oceans of duration and space.

Locke.

And I have loved thee Ocean, and my joy
 Of youthful sports was on thy breast to be
 Borne like thy bubbles onward: from a boy
 I wantoned with thy breakers. *Byron*.

Hear! hear Prometheus from his rock appeal
 To earth, air, ocean, all that felt or feel.
 His power and glory; all who yet shall hear
 A war eternal as the rolling year. *Id.*

So some tall rock, whose bare broad bosom high
 Towers from the earth, and braves the' inclement sky;
 On whose vast top the blackening deluge pours,
 At whose wide base the thundering ocean roars,

In conscious pride its huge gigantic form
Surveys imperious, and defies the storm. *Canning.*

OCEAN. The oceans of the globe occupy, collectively, about six-tenths of the earth's surface. See our article GEOGRAPHY. We have in that article considered the immense body of ter-

restrial waters as divisible into two great basins, which we have called the GREAT ATLANTIC and the GREAT PACIFIC basins. This outline is in a manner followed by the late celebrated Malte Brun in his *Precis de la Geographie Universelle*: the following is his exact sketch:—

- | | | | | |
|--|---|------------------------------------|---|---|
| A. he calls 'The Great Southern Basin,' occupying the greater part of the aquatic hemisphere of the globe. | { | 1. Southern Ocean. | { | Its frontier may be fixed by a line drawn from Cape Horn to the Cape of Good Hope; thence to Van Diemen's Land, and returning by the south of New Zealand to Cape Horn. |
| | | 2. Eastern or Great Pacific Ocean. | | <p>a. The great Archipelago, or the part comprised between New Zealand on the south, the Marquesas on the east, the island of Formosa on the north, and the strait of Malacca on the west.</p> <p>b. The North-Eastern Ocean, between Asia and North America. The seas of Japan, of Kamtschatka, and Beering's Strait, make a part of it.</p> <p>c. The South-Eastern Ocean, stretching from the islands of the great Archipelago to South America.</p> |
| | | 3. Indian Ocean. | | <p>With its various gulfs. The limits above indicated show what remains for this section of the great eastern basin. The Red Sea, or Arabian Gulf, the Persian Gulf, and the Bay of Bengal, form part of this division.</p> |
| B. the 'Western Basin,' forming a kind of channel between the two great continents | { | 4. Western Ocean. | { | <p>a. North Sea. It is separated from the Atlantic on the south-west by the Straits of Dover, Great Britain, the Islands of Faroe and Iceland. The Baltic with its gulfs, and the northern Frozen Ocean, constitute parts of this division.</p> <p>b. The Atlantic Ocean, extending from the above line of demarcation to the two nearest points of Brasil and Guinea.</p> |
| | | | | <p>Branches. {</p> <p>1. The Mediterranean and its gulfs.</p> <p>2. The Gulf of Mexico, &c.</p> <p>3. Hudson and Baffin's Bay, or the Esquimaux Seas</p> <p>c. Ethiopian Ocean, between Brasil and Africa, as far as the line which joins Cape Horn and the Cape of Good Hope.</p> |

On this it may be observed, that nearly one half of the globe is covered with water, while almost the whole of the land is situated in the other half. If the frozen regions about the south pole, says Mr. Myers, do not contain any large tracts of land, we may, by following the meridian of the Cape of Good Hope through the pole to the environs of Beering's Straits, trace a line of about 200°, which is equal to 4000 marine leagues, or 13,840 English miles. This line, therefore, exceeds half the circumference of the globe by about 400 leagues, and passes wholly over an aquatic surface. A line drawn under the equator through Sumatra and Borneo, to the western coast of America, presents, with only two or three interruptions, an aquatic expanse of 4200 leagues. Again, the fortieth parallel of south latitude exhibits a liquid zone, with only 15° of land, and consequently forming an extent of 5300 leagues, a little less than two-thirds of the whole circumference of the earth. Such is the vast extent of the great southern basin of the terrestrial globe.

The ocean, by its refreshing exhalations contributed to the atmosphere, supports vegetable life, and feeds by its vapors the streams of running water, which, though ever flowing, are never exhausted. According to Dr. Halley, the vapors which arise from the ocean, and which the winds convey to the land, are sufficient to create and replenish all the rivers and other waters at the surface of the earth. Without

the benign influence of its vapors indeed the whole earth would become an inanimate desert; and the drying up of the ocean would probably be alone sufficient to destroy all organised nature. This vast body of water serves also to decompose a great part of the corruptible matter of both the vegetable and animal reigns, while, by opening a boundless field for navigation, it unites nations whom impassable mountains and immense deserts would otherwise have separated for ever.

The *shores* washed by the ocean are of three descriptions. 1. Elevated or rocky, sometimes composed of perpendicular cliffs several hundred feet high. 2. Downs or coasts formed of sand-hills accumulated by the waves and winds. 3. Low, or generally formed by the retiring of the sea.

The irregular *depths* of the ocean prove its bottom to be similar to the surface of the continents, and that if left dry it would in like manner present mountains, valleys, and plains. It is only by this analogy that we can form any estimate of its greatest depth, and this may lead us to conclude that the mountains of the continents correspond with the abysses of the ocean. The greatest depth that had been sounded in 1815 was, according to captain Tuckey, 891 fathoms (by Ellis, in his voyage to Hudson's Bay), without finding bottom. Since this Mr. Scoresby (in June 1817) sounded to the depth of 7200 feet: now the highest mountains exceed

three times this number of feet, and, if we allow half that quantity for their abrasion by the action of the elements since their formation, we may conclude that the greatest depth of the ocean is, perhaps, between 30,000 and 40,000 feet. The depth of the sea near the shores is generally observed to be in proportion to their height and declivity, deep water being found close to elevated and steep shores, and shallow water near low ones. The bottom of the ocean, as far as has been ascertained, is composed of sand, gravel, and rock, mixed with the spoils of testaceous animals and coralligenous substances; in many places these latter cover the bottom so as to resemble petrified forests, while in others masses of granite appear.

The level of the waters of the ocean is, generally speaking, every where the same: hence the ocean taken collectively has a spherical or rather a spheroidal surface which may be considered the true surface of our planet. As exceptions to this general level, it has been pretended that the Baltic and Zuyder Zee are higher than the British Sea, the Red Sea than the Mediterranean, and that there is a difference in the levels of the Atlantic and Pacific Oceans on the opposite sides of the isthmus of the Darien; but the facts on which these suppositions rest are by no means sufficiently verified, and, with respect to the Baltic in particular, the contrary has been proved by recent experiments. It seems, however, probable that gulfs or internal seas open to the East are higher than the main ocean, from the accumulation of waters in them by the constant movement of the sea from east to west.

The water of the ocean, besides pure water, contains many foreign substances, the proportions of which vary in different places: the most common are muriatic acid, sulphuric acid, a fixed mineral alkali, magnesia, and sulphated lime. The degree of *saltness* also varies with the localities, or from adventitious causes, and in many places it has been found to be less at the surface than at a considerable depth. Naturalists have proposed different solutions for the phenomenon of the saltiness of the sea, some supposing it to be caused by primitive banks of salt at the bottom; but, if such banks exist, they are probably rather formed by the deposition of the saline particles of the water, than the cause of its saltiness. Halley and Buffon ascribed it to the corruption of vegetable and animal matter, conveyed to the sea by rivers; for it being certain that the fresh water received by lakes that have no outlet corrupts, is decomposed, and forms depositions of salt, they considered the ocean as a vast lake, the common reservoir of all the fresh waters of the globe. But if this hypothesis were correct the saltiness of the sea must be continually increasing, which there seems to be no reason for supposing. Many naturalists have conceived the ocean to be the residue of a primitive fluid, that held in dissolution all the substances of which the earth is composed, and that, after this fluid had deposited all the earthy and metallic particles, there remained in the residue or actual sea some of the saline elementary principles too intimately combined with the water to escape. The only method of freeing

sea-water from its salt is by distillation; but this process is so tedious, and requires such a quantity of fuel, that it can scarcely ever be carried to sufficient extent to supply the total want of fresh water at sea, though it may considerably protract the arrival of so dreadful a calamity; besides, distillation does not entirely deprive the sea-water of its bitter taste when it contains sal ammoniac. This bitterness, which renders sea-water so nauseous, is found to decrease with the depth, whence it probably proceeds from animal and vegetable matter in a state of decomposition near the surface. Spartman found that sea-water taken from the depth of sixty fathoms had the taste of fresh water in which common salt had been dissolved, and on an analysis it was found to contain an extremely small proportion of magnesia. The analysis of three pounds of water taken up near Aurich, in East Friesland (British Sea), and the same quantity from New Rostock in the Baltic gave:—

| Brit. Sea. Baltic. | |
|------------------------------------|----------|
| Muriate of soda, or common salt | |
| grains | 522 263 |
| Muriate of magnesia, or Epsom salt | 198½ 111 |
| Sulphate of lime, or selenite | 23 12 |
| Sulphate of soda, or Glauber salt | 1½ 1 |
| Residue | 1½ 1 |
| | 746½ 388 |

The following are observations showing considerable differences in the degrees of saltiness in nearly the same places.

From Bergman's Physical Geography.

| | |
|--|------------|
| Near Iceland, of its weight | to 13 |
| Near the south coast of Norway | 13 |
| In the Cattegat | 13 |
| In the Baltic | 13 |
| In the Gulf of Bothnia | 13 to 13 |
| In the British Sea, on the coast of Holland | 13 |
| — on the coast of Northumberland | 13 |
| — off the North Foreland | 13 |
| In the English Channel | 13 |
| In the Irish Channel off the coast of Cumberland | 13 |
| In the Atlantic, near the coast of France | 13 |
| — near the coast of Spain | 13 |
| In the Mediterranean near Castiglione | 13 |
| Five miles north of Malta | 13 |
| From De Pages' Voyage round the World. | |
| In lat. 81° N. among the ice | 13 |
| 74° no ice | 13 |
| 64° between Iceland and Norway | 13 |
| 59° between Zetland and Norway | 13 |
| In the Atlantic | 45° N. 13 |
| | 39° 13 |
| | 26° 13 |
| | 10° 13 |
| | 4½° 13 |
| | 1½° S. 13 |
| On the equator | 13 |
| | 20½° S. 13 |
| | 26° 13 |
| In the Gt. S. Ocean | 40½° 13 |
| | 46° 13 |
| | 50° 13 |

Though the saltness of the sea considerably aids in preserving it from putrefaction it is not alone sufficient for that purpose, and without the constant motion produced by *winds, tides, and currents*, it would in a short time corrupt, as has been frequently experienced in long calms with-in the tropics.

The general color of the sea in the open ocean is a deep greenish blue: the latter tint, which is predominant, seems to proceed from the same cause that gives an azure color to the atmosphere, and a deeper blue to distant mountains; for, the blue rays being the most refrangible, are reflected in greatest quantity by the aquatic fluid, which, by reason of its density and depth, causes them to undergo a strong refraction. The other shades, which have been observed in the waters of different seas, seem to depend on local causes, and often perhaps on optical illusion; thus the water of the Levant is said at times to have a purple tint, the sea in the Gulf of Guinea to be whitish, and near the Maldiva Islands black. The water of the Gulf of California is reddish, whence its name Vermilion Sea. The changes of color in proceeding from the British Sea to the Frozen Ocean have been noticed by several voyagers; in the first it is the common greenish blue, in the sea of Norway a clear deep blue, and in the Frozen Ocean a deep black. The approach to the coasts of the continents, or of large islands, is generally denoted by the lighter green or yellowish tint of the water denoting being in soundings. The southern seas present at times a phenomenon which terrified their early navigators, who, seeing large spaces of the sea of a blood color, conceived it a portent of some dreadful catastrophe; this appearance, however, seems to be generally produced by a multitude of sea insects of a red color.

The *luminous* appearance of the sea at night is a magnificent and imposing spectacle. When gently agitated, innumerable sparkles of light, some of dazzling brilliancy, others of a silvery white, will group themselves in a thousand forms; but when disturbed the appearance is more tumultuously grand, waves of fire rising, rolling onward, and breaking in brilliant foam. This phenomenon has occupied the attention of many naturalists, some ascribing it solely to animals of the zoophite and mollusca classes, all of which they say possess phosphorus, in a greater or less degree; others, while they admit the existence of luminous sea insects, are of opinion that the light of the sea is more particularly caused by animal and vegetable substances, which in the process of putrefaction discharge their phosphorus. Sir Isaac Newton was inclined to attribute it to friction alone, from the observation that the light is more brilliant when the sea is most agitated; others again, from particular experiments, conceive that it may proceed, at least in part, from a matter contained in the sea-water which has a direct analogy with electricity; finally, it has been supposed that the spawn of fish has a considerable share in this phenomenon. See our article MEDITERRANEAN.

The observations made on the temperature of the sea afford the following general results. 1st.

That the sun's rays rarely penetrate below the depth of forty-five, or according to some of 113 fathoms, below which the sea receives no light, and consequently little or no direct heat from the sun; hence it is inferred that the temperature of the bottom must follow that of the interior of the globe in the different latitudes. 2dly, That the temperature of the sea at the surface differs from that of the atmosphere plus or minus, according to the circumstances of locality, season, weather, time of the day, &c. And 3dly, That the temperature decreases with the depth to a certain degree, but never to freezing, which is prevented by the constant internal heat of the earth.

The following series of observations on the specific gravity and temperature of sea-water, by Dr. Davy, inserted in the Edinburgh Philosophical Journal, were made during a voyage homeward from Ceylon, in 1819 and 1820. They embrace a very large portion of the earth's surface, and, from the accuracy and sagacity of the able chemist by whom they were made, they will be regarded by philosophers as forming a valuable addition to our hydrographical knowledge.

The series of experiments commences at Colombo in Ceylon, on the 4th of December, 1819; and between the 1st of February and the end of June 1820: they were made on board the Eclipse.

Colombo, December 4th, 1819.

| | Temp. Air. | Temp. Water. | Sp. Gr. | Wind. |
|---------|------------|--------------|---------|-------|
| 9h A.M. | 79° | 82° | 1-0228 | N. |
| 5 P.M. | 83 | 83 | 1-0230 | N. |

In both these experiments the water was taken from the shore below the flag-staff.

Colombo, December 11th.

| | Air. | Water. | Sp. Gr. | Wind. |
|---------|------|--------|---------|-------|
| 9h A.M. | 78° | 82° | 1-0231 | N. |

February 4th 1820. On board the Eclipse.
N. lat. 5° 19', E. long. 80° 10'.

| | Air. | Water. | Wind and Weather. |
|----------|------|--------|----------------------------|
| 10h A.M. | 80° | 80-5° | E. gentle, overcast. |
| 12 | 80 | 81 | N.E. do. do. light rain. |
| 2 P.M. | 79 | 81 | N.E. gentle, pretty clear. |
| 5 | 80 | 81 | N.E. by N. do. do. |
| 8 | 77 | 80-5° | N.E. do. little overcast. |

These temperatures were taken in sight of land.

February 5th 1820. N. lat. 4° 10', E. long. 80° 15'.

| | Air. | Water. | Wind. |
|---------|------|--------|-------------------------------------|
| 1h A.M. | 79° | 80-5° | N. N. E. gentle, pretty clear. |
| 8 | 76 | 80-5 | Do. overcast, after a heavy shower. |
| 10 | 77 | 80-5 | Do. raining slightly. |
| 12 | 79 | 81 | Do. slightly overcast. |
| 2 P.M. | 80-5 | 81-5 | Do. rather cloudy. |
| 4 | 80 | 82 | Do. clear. |
| 6 | 77 | 81-5 | Do. pretty clear. |
| 8 | 80 | 81-5 | Do. clear. |
| 10 | 80 | 81-5 | Do. clear. |

By comparing the chronometer and dead reckoning, it appeared that the ship had been in a current flowing towards the west the whole day.

February 6th 1820. N. lat. 2° 19', E. long. 81° 14'

| | Air. | Water. | Wind and Weather. |
|---------|-------|--------|-------------------------------|
| 8h A.M. | 81.5° | 82° | N. E. Moderate, a few clouds. |
| 10 | 82 | 82 | Do. do. do. |
| 12 | 82.5 | 82.5 | Do. do. do. |
| 2 P.M. | 82.5 | 82.5 | Do. do. do. |
| 5 | 82 | 82 | Do. do. do. |
| 9 | 81.5 | 82.5 | Do. clouds collecting. |

The ship seemed, during this day, to have been in a current from the north.

February 7th 1820. N. lat. 0° 48'.

| | Air. | Water. | Wind and Weather. |
|----------|------|--------|---|
| 10h A.M. | 77° | 82° | Calm, overcast, rainy. |
| 12 | 77 | 82 | N. E. raining slightly, overcast. |
| 2 P.M. | 78 | 82.5 | Calm, and overcast. |
| 5 | 75 | 81.5 | W. very gentle, heavy shower just passed. |
| 9 | 77.5 | 82 | E. by N. gentle, pretty clear. |

There was much thunder and lightning during the night, and the weather was squally with heavy rain.

February 8th, 1820. S. lat. 0° 5', E. long. 81° 37'.

| | Air. | Water. | Wind and Weather. |
|---------|------|--------|---------------------------|
| 6h A.M. | 79° | 82.5° | N. E. almost calm, clear. |
| 8 | 81 | 82.75 | Do. do. |
| 10 | 82 | 83 | Do. gentle. |
| 12 | 82 | 83.5 | Do. do. do. |
| 2 P.M. | 82.5 | 84 | Do. do. do. |
| 5 | 84 | 84.5 | Calm, do. |
| 6h P.M. | 81.5 | 83.75 | Calm, clear. |
| 8 | 80 | 83 | N. W. Almost calm, clear. |
| 10 | 79 | 82.5 | Do. do. do. |

The night was fine, and almost calm.

February 9th 1820. S. lat. 0° 41', E. long. 81° 49'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|---------|------|--------|-------|------------------------------|
| 6h A.M. | 77° | 82.5° | | W. very gentle, clear. |
| 8 | 80 | 83 | | W. by S. do. do. |
| 10 | 81 | 83 | | W. gentle do. |
| 12 | 81 | 84 | 6° | W. by N. do. do. |
| 2 P.M. | 78 | 83 | 4 | N. W. squally, raining hard. |
| 6 | 80 | 83.5 | 5 | Do. do. cloudy. |
| 10 | 79 | 82 | 3 | Do. do. do. |

The night was rather squally and cloudy, with occasional showers. These hygrometrical observations were made with two thermometers, one of which had its bulb covered with an absorbent substance, and wetted with water. The degrees in the column show the descent of the mercury by the cold, produced by evaporation.

February 10th 1820 S. lat. 2° 8', E. long. 81° 54'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|---------|------|--------|-------|------------------------------------|
| 7h A.M. | 77° | 81.5° | 2.5° | N. by W. squally, cloudy, showery. |
| 10 | 78.5 | 82 | 3.5 | Do. do. |
| 12 | 80.5 | 82 | 5.5 | Do. do. |
| 2 P.M. | 82 | 82 | 5 | Do. do. |
| 6 | 79 | 81 | 4 | Do. do. |

The night was boisterous, with heavy rain, and some thunder and lightning.

February 11th 1820. S. lat. 4° 45', E. long. 81° 54'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|---------|------|--------|-------|--------------------------|
| 7h A.M. | 79° | 81.5° | 4° | W. by W. stormy, cloudy. |
| 10 | 81 | 82 | 4.5 | W. do. do. |
| 12 | 79 | 81.5 | 4 | W. overcast, rainy. |
| 2 P.M. | 81 | 82 | 4 | W. squally, do. |
| 6 | 78 | 81.5 | 2 | W. do. raining slightly. |
| 9 | 79 | 81.5 | 4 | W. fresh, pretty clear. |

The wind was fresh during the night, and the sky pretty clear, with occasional showers.

February 12th 1820. S. lat. 7° 10', E. long. 82° 26'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|---------|------|--------|-------|---|
| 6h A.M. | 77° | 81.5° | 2° | W. fresh, cloudy, raining slightly. |
| 10 | 80.5 | 82 | 5.5 | W. by S. do. pretty clear. |
| 12 | 81 | 82 | 5 | Do. do. shower coming. |
| 2 P.M. | 82 | 82.5 | 6 | S. S. W. moderate, cloudy. |
| 6 | 80 | 82 | 4 | S. W. very gentle, cloudy, slight rain. |
| 8 | 81.5 | 82.5 | 5.5 | S. W. do. clear. |

The night was rather squally, with some heavy showers.

Between about N. lat. 3° and S. lat. 7° or 8° a north-west or westerly wind prevails during the same month that the north-east wind prevails in Ceylon. About the limits of the north-east and north-west, and of the south-east and north-west, calms commonly occur. Hence, we may expect that, as those parts of the ocean within the tropics are particularly liable to calms, the temperature of the water will be unusually high; and that in those parts of the ocean within the tropics which are particularly liable to squalls, the temperature of the water will be lower. The north-west or little monsoons blow from Madagascar, and the direction is probably connected with that great island. The north-west is succeeded by the south-west monsoon in the above latitudes.

February 13th 1820. S. lat. 7° 57', E. long. 82° 52'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|---------|-------|--------|-------|----------------------------------|
| 6h A.M. | 78.5° | 83° | 2.5° | S. W. very gentle, pretty clear. |
| 8 | 81 | 83.5 | 5 | Calm, clear. |
| 10 | 81 | 83.75 | 5 | S. W. by W. very gentle, clear. |
| 12 | 83.5 | 85 | | S. by E. do. do. |
| 2 P.M. | 82.5 | 85.5 | 6.5 | S. E. do. do. |
| 6 | 81.5 | 84.5 | 6.5 | S. do. do. |
| 9 | 82 | 83 | 6 | S. by E. do. do. |

The night was calm, with frequent showers.

February 14th 1820. S. lat. 7° 59', E. long. 82° 20'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|---------|------|--------|-------|---------------------------------|
| 6h A.M. | 80° | 83.5° | 3.5° | S. W. very gentle, cloudy. |
| 10 | 80 | 83.5 | 5 | Do. gentle do. |
| 12 | 83.5 | 84.5 | 7.5 | Calm, light clouds |
| 2 P.M. | 80 | 84 | 4 | S. fresh, a squall approaching. |
| 6 | 82 | 84 | 6 | Calm, light clouds. |
| 9 | 81.5 | 83.5 | 3 | S. by E. moderate. |

Till midnight there was a fresh breeze, which was followed by a calm and much rain.

February 15th 1820. S. lat. 8° 34', E. long. 81° 29'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|-----------|------|--------|-------|---------------------------|
| 6½h A. M. | 79° | 83.5° | 3° | Calm, partially overcast. |
| 10 | 81 | 84 | 4 | W. by N. gentle. |
| 12 | 82 | 84.5 | 5 | W. by W. do. |
| 2 P. M. | 84 | 85 | 6 | Calm, partially overcast. |
| 6 | 81 | 84 | 4 | S. W. very gentle. |
| 9 | 80 | 84 | 4 | Calm, clear. |

The night was clear and calm, and there was some swell from the south-east.

February 16th 1820. S. lat. 9° 3', E. long. 81°.

| | Air. | Water. | Hygr. | Wind and Weather. |
|-----------|------|--------|-------|----------------------------------|
| 6½h A. M. | 81° | 83.5° | 6° | S. E. very gentle, pretty clear. |
| 10 | 85 | 84.5 | 8 | Do. do. do. |
| 12 | 85 | 84.5 | 8.5 | Do. do. do. |
| 2 P. M. | 85 | 85.25 | 9 | Do. do. do. |
| 6 | 80 | 84.5 | 4 | N. gentle, dark clouds. |
| 9 | 82 | 84 | 4 | Calm, some dark clouds. |

The night was calm and fine.

February 17th 1820. S. lat. 9° 19', E. long. 80° 39'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|-----------|------|--------|-------|-------------------------------|
| 6½h A. M. | 80° | 83.5° | 4° | Calm, pretty clear. |
| 10 | 83 | 84.5 | 6 | Do. rather cloudy. |
| 12 | 83.5 | 84.5 | 6 | Do. cloudy. |
| 2 P. M. | 86 | 84.5 | 9 | Do. rather cloudy. |
| 6 | 81 | 84 | 3.5 | W. gentle do. after a shower. |
| 8 | 81.5 | 84 | 4.5 | Do. do. |

The night was rather fine, and the wind occasionally approaching to fresh.

February 18th 1820. S. lat. 10° 8', E. long. 80° 29'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|----------|------|--------|-------|---------------------------------|
| 7h A. M. | 76° | 83.5° | 2.5° | S. W. gentle, overcast. |
| 10 | 81 | 83.5 | 5 | S. S. W. do. do. |
| 12 | 82 | 83.5 | 6 | S. by E. do. slightly overcast. |
| 2 P. M. | 81 | 83.5 | 5 | S. W. do. overcast. |
| 6 | 80 | 83 | 6 | S. moderately do. |
| 8 | 80 | 83 | 5 | S. gentle, clear. |

The night was fine with little wind.

February 19th 1820. S. lat. 10° 27', E. long. 80° 25'.

| | Air. | Water. | Hygr. | Wind and Weather. |
|----------|------|--------|-------|--------------------------------|
| 7h A. M. | 80° | 83° | 4° | Calm, pretty clear. |
| 10 | 82 | 84 | 6 | W. N. W. very gentle. do. |
| 12 | 84 | 83.5 | 7 | Do. do. do. |
| 3 P. M. | 83.5 | 84.5 | 8 | Do. do. do. |
| 6 | 82 | 83.5 | 6 | W. by N. gentle, rather clear. |
| 9 | 78 | 83 | 2 | Calm, overcast after a shower. |

The night was rainy, with little wind.

February 20th 1820.

| | Air. | Water. | Evap. | Wind and Weather. |
|-----------|------|--------|-------|-------------------------------------|
| 6½h A. M. | 77° | 82.5° | 2° | Calm, overcast. |
| 10 | 79 | 83 | 4 | Do. do. do. |
| 12 | 79 | 83 | 3 | Variable, very gentle, slight rain. |
| 6 P. M. | 76 | 82 | 1 | W. N. W. gentle, overcast. |

The night was stormy and rainy, and the wind blowing a gale. During this gale the sky was thickly overcast, so as to be of a dark gray or light sooty hue, but the sea retained its usual color. Its blue color appeared very distinct, when one looked immediately down from the ship into the sea, and it was equally evident in the waves as they rose, their heads being between the light and the eye of the observer. Even in the color of the surface of the sea in general a tint of blue might be distinguished, but it was not bright on account of the darkness of the surface. Hence we may infer that the ocean does not owe its blue color to the reflected azure of the sky, as several authors have supposed.

It was long doubted whether sea-water would freeze, and this doubt was strengthened by the experience of navigators, who found that the ice taken up from the ocean, when thawed, produced perfectly fresh water: hence Buffon supposed it to be formed in rivers, by whose currents it was carried into the ocean. Captain Cook on the contrary ascribed its origin to snow; which, being more solid, and at the same time lighter, bulk for bulk, than the sea-water, would float on the surface and be converted into ice, which must continually augment in thickness from other snow, rain, &c. It is now, however, proved that it requires no very extraordinary degree of cold to freeze water more impregnated with salt than that of the ocean, and that it gets rid of its salt in the process of congelation. Oceanic ices are generally met with in lower latitudes of the southern than of the northern hemisphere; for the northern polar sea being almost surrounded by land, which opposes the free drift of the ices, it is only the pieces formed in the bays of the rivers of America that are carried by the polar current to the south, and such are occasionally met with on the west side of the Atlantic, so low as the latitude of 40°. On the contrary, the Greenland ships who keep along the coast of Europe, where is a constant current from the south, seldom meet with ice till they arrive at the latitude of 76°, and they are usually enabled to advance to the latitude of 80° or even of 82° before their progress is finally stopped by connected field ice. Between Asia and America captain Cook found the continents joined by ice in 70°, and his farthest progress was only 70° 48'.

In the southern seas, there being no obstacle from lands to the drifting of the ices, they are often met with in large masses in latitude 40°. In 60° the ice islands are so numerous as to render navigation extremely perilous, and connected field ice usually entirely arrests it in 70°. In this ocean captain Cook was unable to approach the pole nearer than 71° 10'. This navigator also describes the ice islands of the southern seas as of much greater extent and elevation than those he ever met with in the northern. It is observed that the atmosphere is warmer where ice islands are first met with than in the immediate lower latitude previously passed through, which seems to proceed from the ice reflecting the sun's rays, and also that the temperature is greater near these masses in the re-

gions of their formation than when having drifted into lower latitudes they are thawing, which is evidently caused by the progress of fusion; for, ice being formed by the deprivation of caloric, its fusion can only be produced by a new combination of the same element, which it absorbs from the atmosphere, and renders it extremely cold. The approach to ice islands is denoted, even in the darkest night, by a whitish light which they reflect in the horizon, and which seamen call the blink.

Humboldt has some observations on this subject, which combine, in his own manner, a great deal of scientific and practical information:— 'We must distinguish,' he says, 'with respect to the temperature of the ocean, four different phenomena. 1st, The temperature of the water at the surface corresponding to different latitudes, the ocean being considered at rest, and destitute of shallows and currents. 2dly, The decrease of heat in the superimposed strata of water. 3rdly, The effect of billows on the temperature of the surface water. 4thly, The temperature of currents, which impel with an acquired velocity the waters of our zone across the immoveable waters of another zone. The region of warmest waters no more coincides with the equator, than the region in which the waters reach their maximum of saltness. In passing from one hemisphere to another, we find the warmest waters between 5° 45' of N. lat., and 6° 15' of S. lat. Perrins found their temperature to be 82·3°; Quevedo 83·5°; Churruca 83·7°; and Rodman 83·8°. I have found them in the South Sea to the east of the Galapagos Isles 84·7°. The variations and the mean result do not extend beyond 1·3°. It is very remarkable that, in the parallel of warmest waters, the temperature of the surface of the sea is from 3·6° to 5·4° higher than that of the superincumbent air. Does this difference arise from the motion of the cooled particles towards the bottom, or the absorption of light which is not sufficiently compensated by the free emission of the radiant caloric? As we advance from the equator to the torrid zone, the influence of the seasons on the temperature of the surface of the sea becomes very sensible; but, as a great mass of water follows very slowly the changes in the temperature of the air, the means of the months do not correspond at the same epochs in the ocean and in the air. Besides, the extent of the variations is less in the water than in the atmosphere, because the increase or decrease in the heat of the sea takes place in a medium of variable temperature, so that the minimum and the maximum of the heat which the water reaches are modified by the atmospherical temperature of the months which follow the coldest of the warmest months of the year. It is from an analogous cause that in springs which have a variable temperature, for example near Upsal, the extent of the variations of temperature is only 19·8°, while the same extent in the air from the month of January to August is 39·6°. In the parallel of the Canary Islands Baron Von Buch found the minimum of the temperature of the water to be 68°, and the maximum 74·8°. The temperature of the air in the warmest of the coldest months is, in

that quarter, from 64·4° to 75·2°. In advancing towards the north, we find still greater differences of winter temperature between the surface of the sea and the superincumbent air. The cooled particles of water descend till their temperature reaches 39·2°; and hence in 46° and 50° of latitude, in the part of the Atlantic which is near Europe, the maximum and minimum of heat are

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| In the water at its surface, | 68·0° and 41·9° |
| In the air 'from the mean of warmest and coldest months, | 66·2 and 35·6 |

The excess in the mean temperature of the water over that of the air attains its maximum beyond the polar circle, where the sea does not wholly freeze. The atmosphere is cooled to such a degree in these seas (from 63° to 70° of lat., and 0° of long.) that the mean temperature of several months of winter descend on the continents to 14° and 10·4°, and on the coasts to 23° and 21·2°, while the temperature of the surface of the sea is not below 32° or 30·2°. If it is true that even in those high latitudes the bottom of the sea contains strata of water which, at the maximum of their specific gravity, have 39·2° or 41° of heat, we may suppose that the water at the bottom contributes to diminish the cooling at the surface. These circumstances have a great influence on the mildness of countries in continents separated from the Pole by an extensive sea.

The superior degree of cold of the southern hemisphere than of the northern, in equal latitudes, is now generally ascribed to the greater extension of the southern ices towards the temperate zone. The absence of any considerable land in the high southern seas, and the form of the continents, which terminate in angular points, leave a free course to the polar currents, and permit them, as we have already observed, to convey the ices of the pole far into the temperate zone, where their presence causes those sudden transitions from heat to cold, and those intense fogs, met with by navigators in the great southern ocean. Astronomers have also attributed the superior cold of the southern hemisphere to the sun's being seven days and eighteen hours less in the southern than in the northern signs; but the difference produced by this cause ought not to exceed the one twenty-fifth, while the real difference appears to be one-seventh. The theory of the rays of heat has afforded another explanation in the attempt to demonstrate that in a given time the southern hemisphere loses a greater proportion of its constant proper heat than the northern: but this cause ought not to cease suddenly, between 35° and 40° of lat., as is observed to be the case.

In several places near the shores of the sea springs of *fresh water* are observed, rising to the surface, and refusing to combine with the salt water that surrounds them. The most remarkable instances of these phenomena are in the gulf of Spezia; in the Persian Gulf, near the isles of Bahrein; and in the bay of Xagua, on the south coast of Cuba. It may be presumed that veins of water, finding no outlet towards the surface of

the land, follow the direction of internal fissures even under the sea, until they meet with such an outlet, through which they naturally ascend, with a force in proportion to the elevation of their sources and the declivities of the subterranean canals, in the same manner as spouting springs on the land.

The waters of the ocean cede to very slight impulsions, and are constantly agitated by three different movements; 1. The undulatory movement, or waves; 2. The sidereal movement, or tides; and 3. Currents.

Every movement of the atmosphere, in the form of *winds*, produces a correspondent movement on the surface of the ocean, which increases in rapidity and violence with the velocity and force of the winds: thus a moderate breeze produces a gentle undulation, which, moving slowly onwards, exhausts itself and subsides tranquilly. In a storm the ocean is furrowed by tremendous waves or mountainous ridges of water, each of which rolls on with furious rapidity, until its summit arrives at an overcharging elevation, from which it necessarily precipitates itself by the force of gravity, and, by the acceleration it has acquired in its descent, impels forward the mass of water immediately before it, which in its turn rises, forms a wave, and pushes forward the water before it, and thus is a continual succession of waves generated. Dr. Woolaston found the velocity of the waves to be nearly sixty miles an hour close to the east coast of England. It seems of necessity that their comparative velocity must be greater in the open ocean than near the shores in shoal water, where the mixed particles of sand and mud increasing the density of the fluid, as well as the friction on the bottom, must considerably retard their progress.

Geometricians have attempted to calculate the velocity of the propagation of waves, as being the same as that which a heavy body acquires in descending from a height, equal to half the depth of water in the channel; consequently, if the depth is one foot, the velocity of the wave will be $5\frac{1}{2}$ feet per second of time, and, as the depth is greater or less, the velocity will vary into a ratio underdoubled of the depths, provided they are not too great.—*La Grange Mécanique Analytique*.

To that state of the ocean after a storm, when mountainous and long billows follow each other slowly and subside without breaking, seamen give the name of *swell*, while high breaking waves are called a *sea*. After a storm, if a wind springs up in an opposite direction, the waves it creates being contrary to the swell, what is called a cross sea is produced, often more dangerous than the most mountainous but regular waves. A swell is often experienced in a contrary direction to the wind blowing at the moment, and is a certain prognostic of a change of wind to the direction of the swell, the latter sometimes preceding the former several hours. The extraordinary long swell, always met with near the equator, seems to be caused by the more direct and powerful influence of the sun and moon on this part of the ocean, by which it is necessarily more agitated than nearer the poles, where the action of the heavenly bodies is indirect; besides, the

equatorial region performing its diurnal revolution with greater velocity, and at the same time tracing a larger circle than any other portion of the globe, its waters must be more agitated by the centrifugal force, which, depriving them of a portion of their gravity, renders them more susceptible of external impressions. It is doubtful to what depth the sea is agitated by the winds: twenty fathoms seem to be the farthest to which divers have descended, and at this depth they have found the water so troubled, that mud and shells were carried to considerable distances; while other divers pretend that at the depth of fifteen fathoms they have found the water perfectly tranquil even in the greatest storms. The breaking of the waves on a flat shore is named a *surf*, and is a phenomenon, worthy of particular notice. The surf, says Marsden, (*History of Sumatra*), is at times composed of but one rank of waves along the shore, at other times there are two, three, four, and even more, one behind the other, extending half a mile from the shore. The surf begins to take its form at some distance from the place where it breaks, and augments by degrees as it advances, until it arrives at the common height of fifteen or twenty feet, from the summit of which elevation the wave precipitates itself like a cascade from a precipice, with a noise that may be heard at several miles distance, and which often in the night gives the navigator sufficient notice of his danger to enable him to escape shipwreck on shores where there would be no human possibility of saving his life. Although from the first formation of the surf the water seems to have a rapid progressive motion towards the land, yet a light object floating on it, instead of being carried on shore, drifts parallel to it if the tide is flowing, and drives off if it is ebbing; whence it seems probable that the movement is propagated in the fluid alone as sound is in the air, and that the mass of the wave is not propelled forward, the only real progressive movement being produced by the perpendicular fall at the moment of the breaking of the surf, when the wave, by its descending weight, spreads itself in foam to a greater or less distance, in proportion to its elevation and to the declivity of the shore. Though the wind produces the wave which is to form the surf, it is certain that the wind is not the immediate cause of the surf itself, for it is often greatest in a calm, and least in a storm, and is also often most violent when the wind blows off the shore. Marsden supposes that when the wave approaches a shore whose depth is not in proportion to its volume, this wave, instead of pressing on a mass of water which would elevate itself to an equal height and form another wave, presses on the ground, the reaction of which forces it to precipitate itself as we have described. The greatest surfs are observed between the tropics, and particularly on the coast of Africa, on that of Coromandel, and the west coast of Sumatra.

Tides are periodical oscillations of the sea, caused, as it is said, by the attractions of the sun and moon, and more particularly of the latter; but they involve considerations of sufficient importance to entitle them to a distinct notice. See *TIDES*.

Between the tropics, when uninfluenced by any local circumstances, they flow from the east with the movement of the celestial bodies. In the northern temperate zone they flow from the south, and in the southern temperate zone from the north; that is in both from the equator, where the power of these bodies is most forcibly exerted on the waters. In the northern Frozen Ocean the tides are in general very weak, owing to its distance from the centre of the sidereal attraction, from the lands which surround it, and from the ices with which it is encumbered. Of the tides in the southern Frozen Ocean we have little or no knowledge. The irregularities of the bottom of the ocean, the position of coasts, their declivity under water, the different breadths of channels and straits, winds, currents, and other local and temporary causes, destroy the regularity of tides, and, by varying the degree of friction of the waters, shorten or prolong the duration of the ebb and flood. In most places of the globe the tide flows twice in twenty-four hours, according to the principles of the sidereal attraction; there are, however, a number of exceptions, particularly among the Asiatic islands within the tropics, as well as on the coast of Van Diemen's Land, where there is but one tide of flood in twenty-four hours, and in those places the passage of the moon over the meridian usually makes high water.—Horsburgh. Ind. Direc. Thus among the scattered islands of the tropics the tides are regular, but the rise is inconsiderable; while on the oceanic coasts of Europe, and on the east coast of Asia, they are extremely strong, and subject to many irregularities. The highest tides yet observed are in the Gulf of St. Malo, on the coast of France, where the flood, driven back by the coast of England, accumulates and rises to the height of seven and eight fathoms. It is difficult to give credit to the accounts of the travellers who inform us that, in 1632, the island of Formosa experienced a tide that passed over the chain of mountains that traverses the island!

Among pilots it is customary to reckon the time of *high water* by the point of the compass the moon bears on at that time, allowing three quarters of an hour for each point: thus in places where it is high water at noon, the tide is said to flow north and south, or twelve o'clock; if she bears south-east at high water, it is said to flow south-east and north-west, or nine o'clock; and if she bears south-west it is said to flow south-west and north-east, or three o'clock; and so on for every point of the moon's bearing. But this method of reckoning the time of high water by the compass is liable to great errors. Thus, for instance, it is said, the tide flows east and west, or six hours at Plymouth; but if it was thence understood that the moon is always east or west when it is high water there at full and change very dangerous consequences might result; for, when the moon has a high northern declination, it may happen that she will not bear due east till near eight o'clock in the morning at Plymouth, which will be about two hours after high water, and on the same day she will bear due west soon after four o'clock in the afternoon, or nearly two hours before high water. The best

rule would be to say it is high water so many hours after the moon has passed the meridian.

Currents are movements of the ocean produced by various causes, and may be divided into general and particular; the former, depending on fixed and general causes, always preserve the same direction and limits; while the latter, resulting from local and temporary ones, vary in both. Between the latitudes of 30° , in both hemispheres, a constant movement of the ocean is observed, which seems to convey its waters from east to west, or in a contrary direction to the rotation of the globe: by another movement the waters of the polar seas are conveyed towards the equator. The causes of these two general and constant currents are the heat of the sun and the rotation of the globe. See our article *CURRENT*.

The existence of contrary superior and inferior currents, supposed by Halley and denied by Buffon, is still doubtful. Those who admit these opposite currents assign as the possible causes the different densities of the waters at different depths, a great rapidity of movement towards the surface, and the cohesion of the molecules of fluids. In the Strait of Gibraltar, the Sound, and the channel of Constantinople, these contrary currents are asserted to exist. See *GIBRALTAR*.

When two opposite currents of equal force meet they form a spiral vortex, or *whirlpool*, of which the most celebrated are the Maelström, on the coast of Norway, and Euripus, in the Strait of Negropont. Charybdis, in the Strait of Messina, has also been described, both by the ancients and moderns, as a whirlpool, though it seems to be only a violent agitation of the waters at the surface by the meeting of the tides, and has no vortex. It was the phenomena of whirlpools that gave rise to the now exploded idea of abysses, which penetrating through vast masses of land formed subterranean communications between distant seas; such as between the sea of Norway and the Gulf of Bothnia by the Maelström, between the Persian Gulf and Caspian Sea, &c.

If we set out from 63° of N. lat., on the east side of the old continent, and follow its coasts to beyond the equator, we find them presenting a series of vast basins and gulfs penetrating into the continent, and enclosed within chains of islands and banks, separated by narrow and winding channels. On the western side of the same continent we observe nothing similar. From the north cape of Lapland to the Cape of Good Hope the coast presents a continuity unbroken, except by the mouths of rivers, and by the entrances of the Baltic and Mediterranean seas; the formation of which are accounted for on different principles; and with respect to the British islands, which form a mere point in this space, their separation from the continent was probably produced by a sudden convulsion of the earth, rather than by the gradual action of the waters.

In following the eastern coasts of the new continent, from the latitude of 60° N. to within 10° of the equator, ruptures of the land and chains of islands and banks are presented to us similar to those we have observed on the east coasts of our own continent: thus Davis's Strait

and Hudson's Bay answer to the Sea of Tartary, the Gulf of St. Lawrence to the Sea of Japan, while the West India islands enclose the Gulf of Mexico and Caribbean Sea, as the Lieue-Kieu islands and the Malay Archipelago do the seas of Corea, of China, and of Sunda. No such appearances are observed on the western coast of America, which, with the exception of the gulf of California, from Cape Horn to Cape Prince of Wales, presents a rampart of abrupt cliffs, immediately washed by the Grand Ocean.

This broken state of the eastern coasts of the continents is ascribed by Buffon and other writers to the constant movement of the ocean from east to west; and this opinion is strengthened by the observation, that the coast of Asia is more broken than that of America, and that it ought to be so from the difference in the masses of waters of the two oceans, the Grand Ocean being at least three times broader than the Atlantic, consequently allowing them the same lengths, and supposing their depths in proportion to their different breadths, the former has nine times the solid contents of the latter, and therefore must, their velocities being equal, act with nine times the power on the body of land that opposes it. Moreover the greatest effect ought to be produced, near the equator, because it is there that the masses of the waters and the velocity of their constant movements are greatest; and accordingly it is between the tropics that the eastern coasts of both continents are most torn, and the greatest effect is manifested precisely where the breadth of the ocean is greatest, that is, in the Atlantic, between the parallels of 7° and 29° N. and in the Grand Ocean, on the entire space between the tropics; for it is at the equator itself that this ocean has the greatest breadth. The only difficulty in adopting the opinion of Buffon is, that the lapse of several centuries has scarcely rendered sensible the action of the sea on these coasts; but to this objection it may be replied that, the sea having washed away the lighter or less cohesive matter that primitively united the now detached lands to the continents, there remain only substances of so hard a nature that the efforts of the ocean against them are almost powerless. It is also to be observed, in support of this hypothesis, that the coast of South America within the tropic, which is exposed to the continual action of the equatorial winds and currents, is lined by a chain of rocky banks which protect it from their violence, while the opposite coast of Africa is bordered by a beach of fine sand.

But, though the changes produced by the sea on the coasts since the period of history are insignificant in a great general point of view, they are nevertheless sufficient to demand particular notice. The sea forms new lands by the sand, shells, marine plants, and mud of rivers which it deposits on the margins of the shores, and also by retiring from some parts, in consequence of having encroached on others. The coasts of the Mediterranean have both gained and lost, so that it is probable the one compensates the other. The port of Alexandria, on the coast of Egypt, grows every day shoaler; and Damietta, the walls of which were washed by the sea in the

thirteenth century, is at present considerably inland. These alterations, however, seem to be produced rather by the sand blown from the desert, than by matters thrown up by the sea; and to compensate them Lake Menzaleh appears to have been formed, either by an irruption of the sea, or by a branch of the Nile, whose channel has been neglected. Some of the ancients supposed that a great gulf once penetrated into Egypt as far as Thebes, by which the isle of Pharos was separated a day's navigation from the Terra Firma; but the existence of this gulf is unsupported by any historical or natural proof, and, with the few trifling alterations we have noticed, the coast of Egypt at this day answers to the earliest description by Herodotus.

On the coast of Syria the island of Tyre has been united to the continent, and on the west coast of Asia Minor the inhabitants of Miletus and Ephesus have several times been obliged to change the sites of their towns to follow the sea which receded from them. The valley through which the Meander now serpentine was evidently once a gulf, its soil consisting of the depositions of the sea and river. On the west coast of Greece many islets have been joined to the main, while the celebrated peninsula of Leucadia has become an island. In the Adriatic the sea has encroached on the coasts of Dalmatia and Istria, and retired from those of Italy, so that the greater part of ancient Lombardy has been formed by the combined depositions of the sea and the Po. Ravenna, which formerly had an excellent port, and was surrounded by lakes and salt marshes, is now three miles from the sea, in the midst of gardens and meadows; Aquileia was also formerly on the margin of the sea, and finally the lagoons of Venice are daily filling up.

From the Mediterranean coasts of France and Spain the sea has retired in several places and gained on none; thus much new land has been formed at the mouths of the Rhone; and Aigues Mortes, which in the thirteenth century was a sea-port, is now five miles inland. Miquelon and Psalmodi were islands in 815, though now two leagues from the sea, and the vineyards of Agde were covered by the sea only a century past. The coasts of Valencia and Catalonia have also considerably gained from the sea, and the port of Barcelona is fast filling up. From this series of facts it would appear that the coasts of the Mediterranean have gained more than they have lost; but it must be considered that, with the exception of Egypt, we are unacquainted with the relative ancient and modern state of the coast of Africa: and besides a number of celebrated ports preserve the same depths as in the time of the ancients, such as Marseilles, Genoa, Syracuse, Navarin, &c.; hence there seems to be no sufficient reason to suppose a diminution of the waters of the Mediterranean.

The waters of the Atlantic by their depositions have formed the bases of the landes, or sandy downs that border the coast of France from Bayonne to Bordeaux, and by which several ancient bays have been filled up. The marshes of la Vendée have also been left by the sea. In the English Channel the bay on the coast of France, in which is Mount St. Michael, grow

shoaler, while near Dol the sea is again encroaching on the lands from which it had formerly retired. The sea has encroached on some of the coasts of England and retreated from others; thus the Goodwin Sands are generally thought to have been formed by an irruption of the sea in 1100, while in later times several of the best harbours between the Thames and Beachy-head have been filled up. On the coast of Lincoln the sea seems to have alternately formed new lands and submerged them.

On the coast of Holland the most remarkable alterations and vicissitudes have been produced by the sea. In the earliest history of this country it is described as composed of immense marshes, alternately inundated by the sea and rivers; the first threw up sand on the shores, and the latter deposited mud on their banks, and thus elevated spots were formed, round which human industry raised embankments, thought capable of resisting the utmost fury of the ocean. The country, however, still remained intersected by lakes and rivers, which silently undermined these new formed lands, and the sea in high tides rushing up the rivers produced terrible inundations. Before 1250 the Zuyder Zee was a lake of middling size, which communicated with the British Sea by the river Vlie; in that year an irruption of the sea gave it its present form and extent. Until 1300 the gulf of the Dollart was a rich plain; and, in 1421, a united inundation of the sea and rivers formed the Biesboch, by submerging seventy-two villages with 100,000 souls.

The coasts of Holstein and Sleswick have alternately lost and gained by the action of the sea. In 1240 the territory of North Friesland had an extent of fifteen leagues east and west, and consisted of rich pastures and corn lands. An irruption of the sea destroyed this smiling appearance, swallowing up a considerable portion of the territory, and, detaching the rest from the continent, formed the island of Nordstrand, which at the commencement of the fifteenth century had still an extent of six to eight leagues, and was celebrated for its fertility and population. The sea still continuing to encroach on it, dikes were thrown up to arrest its progress, and the inhabitants, to the number of 8000, thought themselves in perfect safety. In 1643, however, the sea penetrated by more than forty breaches in the dikes, swept away 1000 habitations and 6000 persons, and of the island left but two fragments above water and several submerged banks; even these small remains have been attacked by the merciless element, the dikes being considerably damaged in 1791 and 1793. On the other hand, the sea deposits on the shores of the mainland of these provinces a fat mud, which forms new lands, that by their great fertility in a few years repay the considerable expense of embanking them. All the west and north coasts of Jutland appear to owe their formation to the sea, which by throwing up sand has made a connected coast of what was formerly probably a chain of islands. It is at least certain, that several gulfs, which, according to the annals of the north, afforded retreats to the Scandinavian pirates, have been thus filled up. The alterations

produced by the action of the waters on the coasts of the Baltic since the memory of history seem to compensate each other, and to be principally produced by currents.

On the eastern shores of the old continent we know that the sea retires from the east shore of the bay of Bengal and encroaches on the west, where it has washed away almost the whole of the ancient city of Mahabilipur, some of the ruins of which, called by the English the seven pagodas, are still to be seen between Madras and Sadras. The sea has also encroached on the Malabar coast, where a part of the old city of Calicut is now under water. The whole coasts of the Red Sea, according to Niehbur, indicate the retreat of the waters. On a great part of the coasts of Cochin-China and Tonquin are observed proofs of the recent retreat of the sea, while on some parts it has encroached, and obliged the inhabitants to remove their villages inland.

The changes operated on the coasts of the new continent are little known to us; the new lands formed at the mouths of the Mississippi and Oronoka owe their origin to the alluvion of these rivers. On the western coast the sea is said to gain on the land, and captain Vancouver observed appearances which indicated a considerable encroachment on the north-west coast.

We are now brought to the consideration of a question which has long divided the most celebrated naturalists:—“Are the waters of the ocean diminishing?” Celsius, a learned Swede, towards the middle of the last century, revived the opinion held by some of the ancients, respecting the gradual desiccation of the ocean, and published a memoir in which he supported the diminution of the waters from the first existence of our continents, and the continuance of that diminution, which, from observations made on the coasts of the Baltic, he estimated at fifty-four inches in every 100 years. This hypothesis was favored by many learned naturalists of the north, among whom Linnaeus stood foremost, and on it founded a theory of the earth; but it at the same time met with great opposition, and even the states of Sweden took a part in the dispute, the clergy anathematising it as contrary to holy writ, and the citizens uniting with them, while the nobles and peasants more wisely remained neutral.

The arguments in favor of the diminution are founded on the shells and other remains of sea animals met with on the highest mountains, the filling up of ancient ports and straits, and the anchors and remains of vessels found far from the sea, and at considerable heights above its present level.

The opposers reply that the two first of these facts ought to be referred to two very different periods; for that the remains of sea animals belong to an age anterior to the formation of the present continents, and consequently prior to the existence of the present ocean, while the changes produced by the sea on the coasts have generally been effected since the memory of history. With respect to the anchors and vessels they explain the fact by supposing them to be the monuments of inland navigations on lakes and rivers which no longer exist, or of the universal deluge, pre-

vious to which there existed other continents inhabited by men, and which disappeared in the grand catastrophe that brought our present continents out of the waters; hence, say they, it is presumable that the antediluvians navigated over our present lands, and threw out their anchors on our mountains, which were then shoals covered by the ocean. It is further observed by the opposer of the diminution, that the experience of twenty centuries, handed down to us by historical record, proves that the ocean with respect to its total volume is perfectly stationary, the diminution by evaporation being exactly compensated by the supplies it receives from rains, rivers, &c. To this it may be replied, that the loss of the sea by evaporation, being compensated only by these supplies, whatever tends to decrease them must necessarily produce an absolute diminution of the ocean; but, as the mountains decrease in height by the action of the elements, the vapors they arrest, and the condensation of which produces rains and rivers, must also be diminished. But what then, it may be asked, becomes of the water thus withdrawn from the ocean? Is it absorbed by volcanoes or by vegetables, or does it rise in vapors to other spheres? These are questions which it is not given to science to resolve, nor are they the only insolvable ones on the subject of the immense ocean, the probable cradle of the universe, and of which it may possibly be also the grave.

A variety of *plants* are nourished by the ocean to which are given the general denomination of *fuoi*, and which are vulgarly known by the names of sea and rock weeds. Some species adhere to the rocks close to the bottom, while others rise from these rocks to the surface, over which they spread for considerable spaces; such is the *fucus giganteus* observed by captain Cook in the Great Southern Ocean, near Terra del Fuego and Kerguelen's Land, which rising from a rocky bottom, twenty-four fathoms deep, spreads over the sea in such a manner that its whole length is estimated at sixty fathoms, though the thickness is not greater than that of a man's thumb. In the North Atlantic is a space extending between the latitudes of 20° and 40°, and between the longitudes of 25° and 40° W., which is at all seasons covered with a species of weed (*fucus natans*) of a beautiful green color, whence the early Dutch navigators gave to this space of the ocean the name of Kroos Zee, Sea of Duckweed, and the Portuguese that of Mer de Sargazo. It was formerly generally believed that this weed was torn from the Florida Reefs, and conveyed by the gulf stream to where it is met with, and hence it received the name of gulf weed: an accurate examination has however shown this idea to be unfounded, and leads to the inference that it propagates in the sea, and vegetates floating. Navigators have been led from isolated facts to consider the meeting patches of rock-weed at sea as a sign of the vicinity of land; this however is by no means a certain indication, such weeds being frequently met with at some hundreds of leagues from any land, and out of soundings.

It seems probable that the different regions of the ocean have their peculiar animals confined to

them by the temperature of the waters and their own species of food. To commence with the lowest class, or zoophytes, they are in great measure so little known, and so difficult to class, that we cannot say if each region exclusively possesses such or such a species. The varieties of corals, called madrepores, millepores, tubepores, &c., seem to exist in a state of vitality only in the tropical regions, and there we find them forming what may be justly named coral seas; such are the South Pacific Ocean, the region between the coast of Malabar and the island of Madagascar and the West Indian seas. The various species of mollusca also appear to be confined to their respective regions, those of the torrid zone not being met with beyond the lowest limits of the temperate. The abysses of the ocean contain monsters of this class, of which we have still but a very imperfect knowledge. Polypuses and hydras, several yards long, have been observed in the English Channel and in the strait of Messina; nor is it unlikely that the famous sea snake of the Norwegian seas is an immense animal of the same class. There is also reason to suppose that the depths of the sea are inhabited by testaceous molluscs, which are never seen on the shores; such appear to be the cornes d'ammon and other species found in a petrified state in the bowels of the earth, and of which none have been hitherto met with on the shores, or fished up from the bottom of the sea.

The want of industry in fishes renders it probable also that each region has its peculiar species, which never quit it: thus the various species of the cod (*gadus*), the herring, and the mackerel, are only found in the northern seas; while the dolphins, albacores, bonetas, &c., are confined to the tropics, or a little beyond them, where they wage an unmerciful war against the flying fish, which is also confined to the torrid region. Cetaceous and oceanic amphibious animals being under the necessity of frequently respiring the atmospheric air, it is probable that their various species are confined to certain climates; thus the black whale of the Northern Frozen Ocean seldom appears in the temperate zone; while the spermaceti whale, which affords ambergris, is scarcely ever seen out of the tropical seas. The seals of the southern seas also differ from those of the north; and the great sea lion of Kamtschatka from that of Greenland.

Each grand maritime division of the globe has also its particular species of *birds*; the albatross and several of the petrel tribe, the penguin, &c., are only met with in the temperate or frozen zones, while the man of war and tropic bird never quit the equatorial regions.

A few words as to the *dominion* of the ocean may be excused from us as Englishmen.

England has long claimed the empire of the Channel, and even of all the three seas, encompassing the British isles. It is in consequence of this claim that children born in these seas are declared natural Englishmen, as much as if born on English ground. The justice of this pretension is strenuously argued between Grotius and Selden.

The open sea in its own nature cannot be exclusively possessed, as no one is able to settle

there so as to hinder others from passing. But a nation powerful at sea may forbid others to navigate it and to fish in it, declaring that it appropriates its dominions to itself, and that it will destroy the vessels that shall dare to appear in it without its permission. Vattel investigates its right to do this. It is evident, in the first place, that nobody has a right to appropriate to himself the use of the open sea; for he who navigates or fishes in it does no injury to any one, and the sea, in both these respects, is sufficient for all mankind. Nor does Nature give to any man a right of appropriating to himself things that may be innocently used, and that are inexhaustible, and sufficient for all; since, every one being able to find in their state of communion what was sufficient to supply their wants, to undertake to render themselves sole masters of them, and to exclude all others, would be to deprive them, without reason, of the benefits of nature. Although the law of nature approves the rights of dominion and property, which put an end to the primitive manner of living in common, this reason could not take place with regard to things in themselves inexhaustible, which cannot therefore be justly appropriated. If the free and common use of a thing of this nature were prejudicial or dangerous to a nation, the care of its own safety would authorise it to subject, if possible, that thing to its dominion, in order to permit the use of it with such precautions as prudence should direct. But this is not the case with the open sea, in which people may sail and fish without the least prejudice to any person, and without putting any other people in danger. No nation then has a right to lay claim to the open sea, or to appropriate the use of it to itself to the exclusion of others.

The kings of Portugal have formerly arrogated to themselves the empire of the seas of Guinea and the East Indies; but the other maritime powers gave themselves little trouble about such a pretension. The right of navigating and fishing in the open sea being then a right common to all men, the nation which attempts to exclude another from that advantage does it an injury, and gives a sufficient cause for war: nature authorising a nation to repel an injury; that is, to make use of force against any one who would deprive it of its rights. Besides, a nation which, without a title, would arrogate to itself an exclusive right to the sea, and support it by force, does an injury to all nations whose common right it violates; and all are at liberty to unite against it, in order to repress such an attempt.

However, observe these casuists, each has the *liberty of renouncing its rights*, and a nation may acquire exclusive rights of navigation and fishing by treaties, in which other nations renounced in its favor the right they derive from nature. These are obliged to observe their treaties, and the nation they have favored has a right to maintain by force the possession of its advantages. Thus the house of Austria has renounced, in favor of England and Holland, the right of sending vessels from the Netherlands to the East Indies. Many examples of like treaties may be found in Grotius, *De Jure Belli et Pacis*, lib. ii. cap. 3.

OCEANIDES, or OCEANITIDES, in mythology, sea nymphs, daughters of Oceanus and

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the goddess Tethys. They were 3000 according to Apollodorus, who mentions the names of seven of them: Asia, Styx, Electra, Doris, Eurynome, Amphitrite, and Metis. Hesiod speaks of the eldest of them, of whom he reckons forty-one. Hyginus mentions sixteen, whose names are almost all different from those of Apollodorus and Hesiod. The Oceanides, like the rest of the inferior deities, were honored with libations and sacrifices. Prayers were offered to them, and they were intreated to protect sailors from storms and dangerous tempests. The Argonauts, before they proceeded to their expedition, made an offering of flour, honey, and oil, on the sea shore, to all the deities of the sea; sacrificed bulls to them, and intreated their protection. When the sacrifice was made on the sea shore, the blood of the victim was received in a vessel; but, when it was in open sea, they permitted the blood to run down into the waters. When the sea was calm they generally afforded a lamb or a young pig; but if it was agitated by the winds, and rough, a black bull was deemed the most acceptable victim.

OCEANUS, in pagan mythology, the son of Cœlus and Terra, the husband of Tethys, and the father of the Oceanides. The ancients called him the Father of all things, imagining that he was produced by Humidity, which, according to Thales, was the first principle from which every thing was produced. Homer represents Juno visiting him at the remotest limits of the earth, and acknowledging him and Tethys as the parents of the gods. He was represented with a bull's head, as an emblem of the rage and bellowing of the ocean when agitated by a storm. According to Homer, he was the father of all the gods, and on that account he received frequent visits from them. He is often, indeed almost always, represented as an old man with a long flowing beard, sitting upon the waves of the sea. He often holds a pike in his hand, while ships under sail appear at a distance, or a sea monster stands near him. Oceanus presided over every part of the sea, and even the rivers were subjected to his power. The ancients were superstitious in their worship of him, and revered with great solemnity a deity to whose care they entrusted themselves when going on any voyage.

OCELLATED, *adj.* Lat. *ocellatus*. Resembling the eye.

The white butterfly lays its offspring on cabbage leaves; a very beautiful reddish ocellated one.

Derham's Physico-Theology.

OCELLUS LUCANUS, or the LUCANIAN, an ancient Pythagorean philosopher, who lived before Plato. His work *Περὶ τοῦ Παντός*, or the Universe, is the only piece of his which is come down entire to us; and was written originally in the Doric dialect, but was translated by another person into the Attic; William Christian, and after him Louis Nogarola, translated this work into Latin; and there are several editions of it both in Greek and Latin. A fragment is also extant of his work on Laws, which is praised by Plato.

OCHINUS (Bernardin), a celebrated Italian born at Seine in 1487, and at first a Cordelier. He afterwards attended to the study of physic,

and acquired the esteem of cardinal Julius de Medicis, afterwards pope Clement VII. But once more changing his mind he resumed his monk's habit, and, aiming at still higher perfection, he, in 1534, joined the reformed sect of the Capuchins. He practised with the most rigorous exactness all the rules of the order; which he contributed so much to improve, that some have called him the founder of it. He was made vicar-general, and became highly eminent for his pulpit eloquence. Pope Paul III., on account of his extraordinary merit, made him his father confessor and preacher. He was thus the favorite both of pope and people; when falling in with one John Valde, a Spaniard, who had imbibed Luther's doctrine, he became a proselyte. He was then at Naples, and began to preach in favor of Protestantism; on which he was summoned to appear at Rome; and in his way thither met at Florence with Peter Martyr, who persuaded him not to put himself into the pope's power: and they both agreed to withdraw to some place of safety. Ochinus went first to Ferrara, where he disguised himself as a soldier; and, proceeding thence to Geneva, arrived there in 1542, and married a woman of Lucca. He then went to Augsburg, where he published some sermons. In 1547 he was invited, together with Peter Martyr, into England, by archbishop Cranmer, to assist in carrying on the Reformation. They arrived in December at Lambeth, were kindly received by Cranmer, and were made prebendaries of Canterbury. Ochinus labored heartily in the Reformation; and his dialogue upon the usurped primacy of the bishop of Rome was translated into Latin by Ponet bishop of Winchester, and published in 1549. But upon the death of Edward VI. being forced to leave England, they both retired to Strasburg in 1553. From this city Ochinus went to Basil, and was invited thence in 1555 to Zurich, to be minister of an Italian church, which consisted of some refugees from Locarno. Ochinus subscribed the articles of faith agreed upon by the church of Zurich, and met in that city with Bullinger, who proved a very good friend to him. He governed this Italian church till 1563, when he was banished thence by the magistrates for publishing some dialogues, wherein he defended polygamy. From Zurich he went to Basil; but, not being suffered to stay there, he fled in great distress into Moravia, where he fell in with the Socinians, and joined them. Stanislaus Lubieniski, the great patron of this sect, gives the following account of his last days in his Hist. Reformat. Polon. 'Ochinus,' says he, 'retired into Moravia and Poland, and even there he was not out of the reach of Calvin's letters.' He returned into Moravia after king Sigismund's edict; who, in 1564, banished all Tritheists, Atheists, &c. During his travels, he fell sick of the plague at Pincknow, and received there all possible kindness from one of the brethren, named Phillippovius. His daughter and two sons, who were with him, died of the plague; but he had buried his wife before he left Zurich. He continued his journey to Moravia, and within three weeks died at Slakow in 1564, aged seventy-seven. His writings are numerous.

OCHINA, in botany, a genus of the monogynia order and polyandria class of plants: cor. pentapetalous: cal. pentaphyllous: berries monospermous, and affixed to a large roundish receptacle. Species two, both natives of the East Indies.

OCHIRE, *n. s.* } Fr. *ocre*, *ochre*; Lat. *ochra*;
O'CHROUS, *adj.* } Gr. *ωχρα*. A coarse kind of
O'CHREY. } earth: ochreous and ochrey
 mean consisting of or partaking of ochre.

This is conveyed about by the water; as we find in earthy, *ochrey*, and other loose matter.

Woodward.

In the interstices of the flakes is a grey, chalky, or ochreous matter. *Id. on Fossils.*

The earths distinguished by the name of *ochres* are those which have rough or naturally dusty surfaces, are but slightly coherent in their texture, and are composed of fine and soft argillaceous particles, and are readily diffusible in water. They are of various colours; such as red, yellow, blue, green, black. The yellow sort are called *ochres* of iron, and the blue *ochres* of copper. *Hill.*

This family is commonly accompanied by native copper, malachite, and brown iron ochre. *Kirwan.*

OCHRE, in mineralogy and the arts, a yellow earthy powder, generally consisting of some sub-salt, or oxide of iron, united with argil or lime. The iron is generally derived from the decomposition of supersulphuret of iron, which is first converted by exposure to the atmosphere and to moisture into sulphuret of iron and then into suboxysulphate. This latter salt, being insoluble, forms a yellow deposit, which penetrates the earth, and constitutes the most common kind of ochre.

Artificial ochres may be prepared of equal, and perhaps of superior quality to those of nature. The sulphate of iron in the manufacture of this article becomes oxysulphate by long exposure to the air. It remains in this situation till it gradually resolves itself into the super-oxysulphate and the sub oxysulphate. The latter falls to the bottom of the vessel in the form of a yellow powder, which, when washed and dried, constitutes a beautiful color. If carbonate of potash is added to the super-oxysulphate, the carbonate of iron will be formed, which will precipitate in the state of a yellow powder. This powder, when washed, and the water evaporated, constitutes an ochre which is a little deeper in color than the last. The heat of boiling water drives off the carbonic acid, leaving the oxide of a fine brown color.

OCHRE, RED, in mineralogy, is arranged by Cleveland as a species of earthy oxide of iron. Its color is described as blood red, sometimes brownish red. It is usually friable, and easily reduced to powder. Fracture dull and earthy. Strongly soiling the fingers, but not unctuous. Specific gravity about 3.00. Seldom in large masses, usually appearing on the surface of ores of iron, or disseminated. It never effervesces with acids, and is often a very pure oxide. By mixture with argillaceous earths, it gradually passes into reddle, bole, &c. It is often found with specular and sparry iron; but in its purest state seldom occurs in large quantities.

When purified by agitation in water it con-

stitutes an important paint for many purposes. It may be made to assume various tints of red, by changing its state of oxidation by the action of a mild heat. To this variety belongs the pigment, called Indian red, brought from the Isle of Ormus, in the Persian Gulf.

OCHRIDA, a town of Greece, in Albania, situated north-east of the lake of Ochrida, and on the declivity of Mount Maniana Petrin. In the neighbourhood are mines of silver and sulphur which principally employ the inhabitants, who amount to about 6000. It is 100 miles north of Joanniva.

OCHROMA, in botany, a genus of the pentandria order, and monadelphia class of plants; natural order thirty-seventh, columnifera: cor. consists of six petals, three external and three internal; antheræ unite, and form a spiral pillar round the style: caps. long, and has five loculements, which contain a number of black round seeds. Of this there is only one species, viz.—

O. lagopus, the down tree or cork wood. This tree is frequent in Jamaica, is of speedy growth, and rises to about twenty-five or thirty feet. The flowers are large and yellow. The capsules are about five inches long, rounded, and covered with a thin skin; which when dry falls off in five longitudinal segments, and leaves the fruit greatly resembling a hare's foot. The down is short, soft, and silky: it is used sometimes to stuff beds and pillows: but, like other vegetable downs, is apt to get into clots. An insipid clear gum exudes from the tree when wounded. The bark is tough, and its fibres are in a reticulated form: it might be made into ropes. The dried wood is so very light and buoyant as to be used by the fishermen in Jamaica for their nets instead of pieces of cork.

OUCHUS ARTAXERXES, a king of Persia, cruel and avaricious; who, to strengthen himself on his throne, murdered all his brothers and sisters. His subjects revolted; but he reduced them, and added Egypt to his dominions. Bagoas, his favorite eunuch, poisoned him for the insults he had offered to Apis the god of the Egyptians; gave his flesh to be eaten by cats, and made handles for knives with his bones.

OCKER, a river of Lower Saxony, which rises in the Hartz Mountains, eight miles south-east of Goslar, passes Wolfenbuttle, Brunswick, and Aller.

OCKHAM, **OCCAM**, or **OCCHAM** (William), a celebrated scholastic divine in the fourteenth century, of the order of Cordeliers. He was a native of England, and disciple to the famous Duns Scotus. He was head of the Nominalists; and acquired so much celebrity as to be denominated the invincible doctor. At the request of Michael de Cesena, general of his order, he became a party man with Lewis of Raviera, who was an avowed enemy of the church of Rome; and he wrote vigorously against pope John XXII. and his successors. Trithemius informs us that he used to say to Lewis, 'My lord, let your sword defend me, and my pen shall be always ready to support you.' He treated Charles and Clement in a book he wrote against them with gross scurrility. The consequence was an accusation against him and Cesena. They were

charged with maintaining that neither Christ nor his apostles had any possessions at all. This doctrine gave rise to that pleasant question, called the bread of the Cordeliers; whether the dominion of things consumed in the use, such as bread and wine, belonged to them, or only the simple use of them, without the dominion? Their rule not permitting them to have any thing as property, pope Nicholas III., who had been of their order, devised a method to enrich them without breaking their rule. He made an ordinance that they should have only the usufruct of the estates, and that the soil and fund of all such donations should belong to the Roman church. But on this account, pope Nicholas's bull was revoked by John XXII. who condemned the use without the dominion, by his *Extravaganta ad Conditorem*. He also condemned, by another *Extravaganta cum inter*, the doctrine about the possession of estates by Christ and his apostles. Ockham and Cesena were also excommunicated, because they had departed from Avignon without the pope's licence, and had written against him. Ockham, however, was absolved before he died, which was about 1347. Several pieces of his, written with considerable wit and subtlety, are extant. The reformed church sometimes makes use of his reasonings against the church of Rome. Melchior Goldast printed, in his *Treatise on Monarchy*, 413 questions of Ockham. His works are mentioned by many authors.

OCKLEY (Simon), a learned orientalist, born at Exeter in 1678, and educated at Queen's College, Cambridge, where he distinguished himself by his intense application to literature. At the usual time he took his degrees of A. M. and B. D., but, marrying very young, was precluded from a fellowship in his college. In 1705 he was presented to the vicarage of Swavesey in Cambridgeshire; and in 1711 he was chosen Arabic professor of the university. He was perfect master of the Arabic and other oriental tongues; the learned Reland said of him, *Vir, si quis alius, harum literarum peritus*. Afterwards he had the misfortune to be confined in Cambridge castle for debt. The above preferments, notwithstanding, he enjoyed till his death, August 9th, 1720. He wrote, 1. *Introductio ad Linguas Orientales*; 2. *The history of the present Jews throughout the world*; translated from the Italian of Leo Modena, a Venetian rabbi; 3. *The Improvements of Human Reason*, exhibited in the Life of Hai Ebn Yokdhan, translated from the Arabic; 4. *The history of the Saracens*, collected from the most authentic Arabic authors, in 2 vols, 8vo. He was also well skilled in the French, Spanish, and Italian languages.

OCNUS, in fabulous history, the son of the prophetess Manto, by the river Tiber, or rather by Tiberinus king of Alba. He assisted Æneas against Turnus, and afterwards built Mantua. *Virg. Æn. x. 198.*

OCRISIA, in fabulous Roman history, the wife of Corniculus, one of the attendants of Tanaquil, the wife of Tarquinius I. As she was throwing into the flames for offerings some of the meats that were served on the table of Tar-

quin, she suddenly saw in the fire what Ovid calls *obsœni forma virilis*. She informed the queen of it; and when by her command she had approached near it, she conceived a son who was named Servius Tullius, and was educated in the king's family. . He afterwards succeeded to the vacant throne. It was reported that Vulcan had assumed the form which Ocrisia saw, and was the father of the sixth king of Rome.

OCTAETERIS, a cycle or term of eight years, in the Grecian chronology, at the conclusion of which three entire lunar months were added. This cycle was in use till Meton's invention of the golden number or cycle of nineteen years.

OCTAGON, *n. s.* } Greek *οκτω* eight and
OCTAGONAL, *adj.* } *γωνια*, an angle. An
OCTANGOULAR, } eight-angled figure; hav-
OCTAHEDRAL. } ing eight angles: octahe-
 dral is, having eight sides.

A figure consisting of eight sides and angles, when all the sides and angles are equal, is called a regular *octagon*, which may be inscribed in a circle.

Harris.

OCTANDRIA, *οκτω* eight, and *ανδρ*, a man, the eighth class in Linneus's sexual system; consisting of plants with hermaphrodite flowers, which are furnished with eight stamina, or male organs of generation. See **BOTANY**.

OCTANT, *adj.* } In astrology, is applied
OCTILE. } to the aspect of a planet distant only one-eighth of a circle, or 45° from another.

OCTAPLA, in sacred literature, denotes a polyglot bible, consisting of eight columns, and as many different versions of the sacred text; viz. the original Hebrew both in Hebrew and Greek characters, Greek versions, &c.

OCTAVE, *n. s.* Fr. *octave*; Lat. *octavus*. The eighth day after some particular festival; eight days after such a festival taken collectively: in music, an interval of eight sounds.

But in this organ the hautboy stop seems to be an octave higher

Addison.

OCTAVIA, a Roman lady, distinguished for her virtues, her beauty, and her accomplishments, the sister of Augustus, and the wife of Marc Antony. She was first married to Claudius Marcellus, by whom she had three children; and after his death, which happened a short time after the war with Persia, became the wife of Antony. She was at this time universally respected and esteemed, and much beloved by her brother; and, although her husband had before been captivated by the allurements of Cleopatra, the merits of Octavia made a great impression on him. . He passed two years and a half with her, during which time she bore him two daughters. She soon after accompanied him into Greece, and restored concord between her husband and brother. She then returned to Rome, while Antony went into the east; and then it was, says Plutarch, that the worst of all diseases, love, and the love of Cleopatra, which had lain so long dormant in his breast, and seemed to have given place to the temperate duties of life, upon his approach to Syria, gathered strength, and broke out into a flame: he had another interview with her, which rivetted

his fetters, and sealed his fate. Octavia was soon apprised of his infidelity, but resolved for that reason to omit no duty that became her situation as his wife: she collected considerable supplies for the war in which he was engaged, and sailed with them to Athens. Here she received the mortifying and distressing orders to advance no farther. Despairing now of a renewal of his affection, she returned to Rome, where Augustus, extremely enraged, wished to persuade her to retire from the world. But she refused to quit her husband's house, and devoted herself to the education of her children, bestowing no less care on those of Antony by Fulvia, his first wife, than she did upon her own. She readily and liberally entertained all her husband's friends who were sent to Rome on business, and used her best endeavours to promote his interest. His attachment, however, to Cleopatra rendered him insensible to her kindness; he solemnly divorced her and married Cleopatra. This affront was highly resented by Augustus, who resolved to revenge her cause by arms, which he ultimately did. See **ANTONIUS**. Marcellus, her son by her first husband, was married to a niece of Augustus, and was publicly intended as a successor to his uncle; but his sudden death plunged all his family into the greatest grief. Virgil, upon this occasion, paid, in his *Æneid*, a melancholy tribute to the memory of a young man whom Rome regarded as her future father. He was desired to recite his composition in the presence of Augustus and of his sister, but Octavia, when he repeated *Tu Marcellus eris*, swooned away. This pathetic encomium upon the virtues of young Marcellus was liberally rewarded by Octavia, and Virgil received 10,000 sesterces for every one of the verses. Octavia had two daughters by Antony, Antonia Major and Antonia Minor. The death of Marcellus continually preyed upon the mind of Octavia, who died of melancholy about ten years before the Christian era.

OCTAVIA, daughter of the emperor Claudius by Messalina. She was betrothed to Silanus, but by the intrigues of Agrippina she was married to the emperor Nero in the sixteenth year of her age. She was soon after divorced upon pretence of barrenness; and Nero married Poppæa, who procured her banishment into Campania. She was afterwards recalled by the people; but Poppæa, determined on her ruin, caused her again to be banished to an island, where she was ordered to kill herself by opening her veins. Her head was then cut off and carried to Poppæa.

OCTAVIANUS (Caius Julius Cæsar Octavianus Augustus), originally called Caius Octavius, was the son of a senator of the same name, who had been prætor in Macedon; and of Accia, daughter of Julia, the son of Julius Cæsar. The Octavian family had been originally settled in Velitra, in the country of the Volsci, and that branch of it from which Augustus sprung had arrived at opulence in the equestrian order. Octavianus was born during the consulate of Cicero, A. U. C. 689, and, according to the most approved chronologists, B. C. 62. At the early age of four years he lost his father, and his mother Accia contracted a second marriage with

Lucius Marcus Philippus. By the care of his mother and father-in-law he received a very liberal education in Rome, and such was his proficiency in the art of public speaking that, before he was twelve years of age, he pronounced the funeral eulogy over his grandmother Julia. His early maturity of judgment, perhaps partly owing to the necessity occasioned by his want of a father, and his discreet behaviour, recommended him to the notice of his great uncle Julius Cæsar, who declared his design of adopting him should he have no children of his own, and who would have taken him into Spain to learn the military art under himself in the war with Pompey's sons, but his mother detained him on account of his weak health. Whilst Octavianus was at Apollonia, improving his powers of eloquence under the famous Apollodorus of Pergamus, he received the news of his uncle's tragical death, and of his own adoption. Although he was dissuaded by his father and mother, and other timid friends, from declaring either his pretensions or his resentment, he determined, though only eighteen, to pass over into Italy without delay, and to judge on the spot what measures it would be proper for him to adopt. Accordingly he landed at Lupia, a small port between Brundisium and Hydruntum, and, upon his arrival, the Brundisian garrison, which was very numerous, and which consisted of veteran soldiers, went out to meet him, and introduced him in a kind of triumph into the city. Octavianus thanked them for their attachment, and, having offered a sacrifice to the gods, declared himself Cæsar's heir, and assumed the title of Caius Julius Cæsar Octavianus. Having supplied himself with money, arms, and provisions, he pursued his route through Campania; and after paying a visit to Cicero at his villa, in the neighbourhood of Cumæ, arrived at Rome, where the party of Antony and Lepidus, under a pretence of avenging Cæsar's death, had obtained universal sway. As Octavianus approached the capital he was met by most of the magistrates, the officers of the army, and the people; but Antony declined showing him any token of respect. As soon as his adoption was publicly ratified in the forum, and duly registered, he waited upon Antony; and requested to have delivered to him, as Cæsar's chief heir, the money which he had conveyed from Cæsar's house to his own, that he might be enabled to discharge his legacies. Antony's behaviour, at this interview, was haughty and imperious; his reply with regard to the money demanded, and of which part had been appropriated to his ambitious purposes, was unsatisfactory; and his address closed with reminding Octavianus, in a style of authority and menace, that the favorites of the people are, generally speaking, short-lived, and that popular affection is more inconstant than the waves of the ocean. Octavianus retired disgusted and offended; and, being aware that the consul withheld his adopted father's money and estate from him in order to disable him from purchasing the favor of the people, he sold his own patrimony, and the estates of his mother and father-in-law, and with the produce of these sales paid part of Cæsar's legacies; and by this act of generosity he so charmed the populace

that they unanimously espoused his interest, and broke out into bitter invectives against Antony for withholding Cæsar's estate.

The army near Rome, who had long wished to see the conspirators punished, began to turn from Antony to his rival, whom they saw more sincerely bent on gratifying their desires. Antony having procured also the government of Hither Gaul from the people, two of the legions that he had brought home from his former government of Macedonia went over to Octavianus. This produced, as usual, interviews, complaints, recriminations, and pretended reconciliations, which only widened the difference; so that at length both sides prepared for war. Thus the state was divided into three distinct factions; that of Octavianus, who aimed at procuring Cæsar's inheritance and avenging his death; that of Antony, whose sole view was to obtain absolute power; and that of the conspirators, who endeavoured to restore the republic. New occasions of variance continually occurred, and at length Octavianus was charged with a design of assassinating his rival, and this furnished Antony with a pretext for drawing into Italy a considerable army. Octavianus, alarmed by this hostile preparation, hastened into Campania; and having collected 10,000 veterans, who had served under Cæsar, marched immediately towards Rome. But as he had no military title, nor any magistracy which gave him a right to command forces, he thought it advisable to halt at the temple of Mars, within two miles of the city, till he obtained the consent of the people for his entry, which was soon granted him. Antony was at this time at Brundisium, and, as he was hourly expected with a considerable force, it was apprehended that the flames of a civil war would be instantly kindled within the walls of the city. Parties were formed for one and the other of these formidable rivals; and, whilst many of the senators were deliberating which side to take, Cicero, probably with a view of procuring for himself a bountiful master, declared for Octavianus. At his motion Antony, who had actually invaded the province of Cisalpine Gaul, and laid siege to Mutina, was declared an enemy to his country. On this the senate sent Octavianus, with the army he had raised, to attack him. The consuls Hirtius and Pansa joined all their forces; and, thus combined, they marched at the head of a numerous army against Antony, into Cisalpine Gaul. After one or two ineffectual conflicts both armies came to a general engagement; in which Antony was defeated, and compelled to fly to Lepidus, who commanded a body of forces in Further Gaul. The two consuls were mortally wounded; but Pansa, previous to his death, called Octavianus to his bed-side, and advised him to join with Antony, telling him that the senate only desired to depress both by opposing them to each other. The advice of the dying consul sunk deep into his mind; so that from that time he only sought a pretext to desert their party. Their giving the command of a part of his army to Decimus Brutus, and their denying him a triumph soon after, served to alienate his mind entirely from the senate, and made him resolve to join Antony and Lepidus. He was

willing, however, to try the senate thoroughly, before he came to an open rupture; wherefore he sent to demand the consulship, which was refused. He then privately sent to sound the inclinations of Antony and Lepidus concerning a junction of forces, and found them as eager to assist as the senate was to oppose him. Antony was, in fact, the general of both armies, and Lepidus was only nominally so, his soldiers refusing to obey him upon the approach of the former. Wherefore, upon being assured of the assistance of Octavianus upon their arrival in Italy, they soon crossed the Alps with an army of seventeen legions, breathing revenge against all who had opposed their designs. The senate now began, too late, to perceive their error in disobliging Octavianus, and gave him the consulship which they had so lately refused; and to prevent his joining with Antony flattered him with new honors, giving him a power superior to all law. The first use Octavianus made of his new authority was to procure a law for the condemnation of Brutus and Cassius; after which he joined his forces with those of Antony and Lepidus.

As they advanced, he went out to meet them; and their meeting took place at a small island formed by the river Rhenus, now Reno, which falls into the Po, after having watered the territory of Bologna, or Bologna. Here was planned the famous system of power called the triumvirate. Having cemented and disgraced their new connexion by the proscription, which was to cut off all their enemies public and private, and to fill their treasury by confiscations, and by the mutual sacrifice of some of their nearest friends and relations, among whom was Cicero, they proceeded to Rome, and filled the city with blood and rapine. In fulfilment of one article of the treaty, settled on this occasion, Octavianus and Antony prepared for an expedition against Marcus Brutus and Cassius, who had made themselves masters of most of the provinces in the east. Accordingly they passed over into Macedon, and met the republican leaders on the plains of Philippi, where the contest was decided by two battles, the second of which terminated with the death of Brutus. On this occasion Octavianus, who was actuated by an implacable spirit of revenge against the authors of Cæsar's death, is chargeable with a degree of cruelty which fixed an indelible stain upon his reputation.

As soon as the republican party was entirely destroyed, Antony went over into Asia, while Octavianus, who undertook to lead back the veteran troops and settle them in Italy, was assiduously employed in providing for their subsistence. He had promised them lands at home as a recompense for their past services; but they could not receive new grants without turning out the former inhabitants, which caused great discontent and disaffection. He was involved soon after in an actual civil war through the violence of Fulvia, and Antony's brother Lucius. This, however, was soon terminated by the activity of his generals, who obliged Lucius to capitulate with his forces in Perugia. This unhappy town, which had shown an inviolable attachment to Lucius,

was punished with inhuman barbarity by Octavianus, who gave it up to plunder, and condemned to death all its senate, in number 300. To the supplications and remonstrances of some of them he answered with characteristic insensibility, 'You must die.' Antony, who came to support his party in this short war, found it terminated; and a new agreement was made between him and Octavianus, in which they shared between them the Roman empire, leaving to Lepidus the African provinces. Octavianus, in this partition, had Rome and the west; and his sister Octavia was married to Antony to strengthen their union. The triumvirs had then a war to maintain with Sextus Pompey, who, being master by sea, reduced the capital to great distress for want of corn. An accommodation with him, therefore, became necessary, which took place under circumstances of apparent friendship, but such as could not be durable. In the interval of domestic peace Octavianus marched into Gaul, where he easily reduced some revolted nations. When he came back to Rome he found a new war with Pompey inevitable, and began preparing for it. In the mean time he was captivated by the charms, personal and mental, of the celebrated Livia, then the wife of Claudius Tiberius Nero. He himself was married to Scribonia, the sister of Scribonius Libo, whom he had taken, chiefly from political motives, after his repudiation of Clodia. But though she had borne him a daughter, and Livia was advanced in pregnancy, so little was his delicacy and so imperious his tyranny, that he divorced Scribonia; and, causing Livia to be divorced from her husband, immediately married her. Within three months she was delivered of a son named Tiberius, afterwards emperor.

Octavianus now resolved to rid himself of Sextus Pompeius. He was master of two fleets; one of which he had caused to be built at Ravenna, and another which Menodorus, who revolted from Pompey, brought to his aid. His first attempt was to invade Sicily; but being overpowered in his passage by Pompey, and his fleet afterwards shattered in a storm, he was obliged to defer his design till the next year. During this interval he was reinforced by a fleet of 120 ships, given him by Antony, with which he resolved once more to invade Sicily. He was again disabled and shattered by a storm: which so raised the vanity of Pompey that he began to style himself the son of Neptune. However, Octavianus having refitted his navy and recruited his forces, he gave the command of both to Agrippa, who proved himself worthy of the trust. He began his operations by a victory over Pompey; and, though he was shortly after worsted, he soon after gave his adversary a complete and final overthrow. Pompey resolved to fly to Antony, from whom he expected refuge, as he had formerly obliged that triumvir by protecting his mother. However, he tried once more, at the head of a small body of men, to make himself independent, and surprised Antony's officers, who had been sent to accept of his submissions. But he was at last abandoned by his soldiers, and delivered up to Titus, Antony's lieutenant, who caused him to be slain. The death of this general removed one very

powerful obstacle to the ambition of Octavianus, and he resolved to get rid of the rest of his associates. An offence was soon committed by Lepidus, that served as a pretext for depriving him of his share in the triumvirate. Being at the head of twenty-two legions, with a strong body of cavalry, he supposed that his power was more than equivalent to the popularity of Octavianus. He therefore resolved to add Sicily to his province; pretending a right, as having first invaded it. His colleague having previously expostulated without success, and knowing that his secret intrigues and largesses had entirely attached the army to himself, went alone to the camp of Lepidus, deprived him of all his authority, and banished him to Circæum.

The Roman world was now governed by a duumvirate; a partnership of authority which, it was evident, could not last long. While Antony, advancing to old age, acted the part of a heedless dissipated youth, enslaved to love and pleasure, the youthful Octavianus was the cool and prudent statesman, making his advantage of every false step of his colleague, and playing the game of ambition with the skill of a master. He took pains to ingratiate himself with the people of Rome, whose gratitude he in some measure deserved by the restoration of peace and plenty to all Italy. His prudent and generous action of throwing into the fire unopened a number of letters from senators, found among Pompey's papers, seemed an earnest of a milder spirit of government. He likewise solemnly declared his intention of resigning his unconstitutional power as soon as Antony should return from his Parthian war. In the mean time he accepted of the important dignity of perpetual tribune of the people, which rendered his person sacred and inviolable.

He now only waited a pretext to declare open war against Antony, and this was soon afforded him by his treatment of his wife Octavia, the sister of Octavianus. But he deferred it for a while, being then employed in quelling an insurrection of the Illyrians. The following year was taken up in preparations against Antony. Antony ordered Canidius with his army to march into Europe; while he and Cleopatra followed to Samos, to prepare for carrying on the war with vigor. The kings who attended him endeavoured to gain his favor more by their entertainments than their warlike preparations; the provinces strove rather to please him by sacrificing to his divinity, than by their alacrity in his defence. In short, his best friends now began to forsake him. His delay at Samos, and afterwards at Athens, where he carried Cleopatra to receive new honors, was extremely favorable to the arms of Octavianus; who was at first scarcely in a disposition to oppose him, had he gone into Italy; but he soon found time to put himself in a condition for carrying on the war, and shortly after declared it against him in form. All Antony's followers were invited over to join him, with great promises of rewards. Their armies were suitable to the empire they contended for. The one was followed by all the forces of the east; the other by all the strength

of the west. Antony's forces composed a body of 100,000 foot and 12,000 horse; his fleet amounted to 500 ships of war. The army of Octavianus mustered only 80,000 foot, but equalled his adversary's in number of cavalry: his fleet was but half as numerous as Antony's, however, his ships were better built, and manned with better soldiers. The great decisive engagement, which was a naval one, was fought near Actium, a city of Epirus, at the entrance of the gulf of Ambracia. Antony ranged his ships before the mouth of the gulf; and Octavianus drew up his fleet in opposition. The two land armies, on opposite sides of the gulf, were drawn up only as spectators. The battle began on both sides with great ardor; nor was there any advantage on either side, till of a sudden Cleopatra fled from the engagement attended by sixty sail; what increased the general amazement was to behold Antony himself following soon after. Yet the engagement continued with great obstinacy till five P.M. when Antony's forces submitted. The land forces soon after followed the example of the navy; and all yielded without striking a blow the fourth day after the battle. See *ROME, ANTONIUS, and CLEOPATRA*.

After the death of Antony, and after having settled the affairs of Egypt, Octavianus left Alexandria in the beginning of September, in the year of Rome 720, with a design to return through Syria, Asia Minor, and Greece, to Italy. On his arrival at Antioch he found there Tirdates, who had been raised to the throne of Parthia, in opposition to Phrahates, and ambassadors from Phrahates, who were come to solicit the assistance of the Romans against each other. Octavianus gave a friendly answer both to Tirdates and the ambassadors of Phrahates, without intending to help either; but with a design to animate the one against the other, and thus to weaken both. After this, having appointed Messala Corvinus governor of Syria, he marched into Asia, and took up his winter quarters. He spent the winter in settling the several provinces of Asia Minor and the adjacent islands; and early in spring passed into Greece, whence he set out for Rome, which he entered in the month Sextilis, afterwards called August, in three triumphs, which were celebrated for three days together. And now Octavianus was at the height of his wishes, sole master of the whole Roman empire. But, to persuade the people that they still enjoyed their ancient government, he continued the old magistrates, with the same name, pomp, and ornaments; but they were to have only subordinate military power, and their old jurisdiction of deciding finally all causes, except such as were capital; and, though some of these last were left to the governor of Rome, yet the chief he decided himself. He likewise won the hearts of the populace by the continued cheapness of provisions and plentiful markets; and he frequently entertained them with shows and sports. Having settled all affairs in the capital he passed into Gaul, towards the close of the year B.C. 27, with a design of proceeding to the reduction of the British islands; but, on his arrival at Narbonne, he received information

that the Salassians, at the foot of the Alps, and the Cantabrians and Austrians in Spain, had shaken off the Roman yoke: he therefore discontinued his progress, and marched in person into Spain, for the purpose of subduing those nations that had revolted. The conquest of the Salassians he committed to his generals. In the year B.C. 23 Octavianus married his daughter Julia to his nephew Marcellus; and in the course of the year he was seized with a dangerous disorder, which threatened his life, of which he was cured by his physician Antonius Musa. When his life was thought to be in danger he had delivered his ring to Agrippa, thus intimating that he deemed him to be a proper successor. Marcellus, who was generally regarded as his intended successor, was disgusted by this preference; but the death of this prince, who was greatly regretted by the Roman people, made way for the introduction of Agrippa to court, and from this time he continued the most confidential friend of Octavianus. At this time the administration of the empire was conducted with great equity and moderation; and many instances are recorded in which he exercised great lenity and self-denial. In the year B.C. 22 he declined the office of dictator and of censor, which were offered him by the senate, and in his general conduct he affected to appear no otherwise than as a private citizen.

Rome being now at peace, Augustus determined to visit the eastern part of the empire; but, as it was necessary to invest some person with authority in Rome during his absence, he appointed Agrippa for this purpose; and, in order to annex additional dignity to his character, he gave him in marriage his daughter Julia, the widow of Marcellus. In his progress through the eastern provinces, during the years B.C. 21 and 20, the emperor recovered from Phraates, king of Parthia, the Roman standards and captives that had been taken from Crassus; he placed Tigranes on the throne of Armenia; and at Samos, to the inhabitants of which he granted the liberty and use of their own laws, he received ambassadors from the remotest part of India. Augustus, after his return, directed his attention to various abuses which needed reform, and to the enactment of regulations that contributed to the perfection of government. He reduced the number of senators from 1000 to 600, and fixed at a higher rate the fortune that was requisite for qualifying a person to be elected of that body; and, that no persons who were eminently fit for the office, might be excluded, he made up their deficiencies of fortune by his own liberality. In the year of Rome 747, B.C. 17, he celebrated the secular games with extraordinary splendor. About this time he also adopted his two grandsons Caius and Lucius; the children of Agrippa and Julia. Having received from Gaul many complaints against the attendants whom he had appointed to levy the tribunes and imposts, and particularly against Licinius, he visited that country; but the principal aggressor, Licinius, contrived to soothe his displeasure by giving him a large portion of the treasures which he had amassed. Upon his return from Gaul, B.C. 13, the death of Lepidus

afforded him an opportunity of assuming the office of supreme pontiff; and, in the first exercise of this authority, he collected all books of divination, of which more than 2000 were committed to the flames. The books of the Sibyls, however, were preserved and entrusted to the custody of the priests. The death of Agrippa was, at this time, a very distressing event to Augustus; but it served to advance Tiberius in the family of the emperor, who by an unwarrantable act of tyranny caused him to be divorced from a wife to whom he was affectionately attached, and to marry the widowed Julia.

The war with Germany now began to be pursued with ardor. That martial people had some time before defeated Lollius, proconsul of Gaul; but Drusus marching into their country with a powerful army obtained great successes in four campaigns against their confederate tribes, and carried his arms as far as the Elbe. His brother, Tiberius, likewise subdued the Pannonians and Dacians. But the joy occasioned by these victories was damped by the death of Drusus, as he was returning to the banks of the Rhine. A peace soon after ensued; and the temple of Janus was again shut for the third time in this reign, in which state it continued twelve years. Before this event Augustus had lost his beloved sister Octavia; and soon after his favorite minister Mæcenas died, who had, indeed, for some time been less in his confidence than formerly. The emperor's intrigues with Terentia, the wife of the minister, are alleged as the cause of their coolness. During these years Augustus received many warm and unequivocal demonstrations of the affection of the people; and, after enjoying the imperial authority for twenty years, he was unanimously requested to accept it for ten years more.

The young Cæsars, grandsons to the emperor, now began to come forwards on the scene; and their early ambition gave him much disquiet. The jealousies that arose between them and Tiberius so disgusted the latter that he retired to Rhodes. In order to grace the solemnity of the assumption of the toga by his elder grandson, Caius Augustus accepted the consulate a twelfth time; and the year before its close, was rendered memorable by the birth of Christ, which event the best critics date four years before the vulgar era. Three years afterwards he was consul the thirteenth time, when Lucius Cæsar took the toga. In this year his domestic peace received a severe wound by the discovery of the scandalous disorders of his daughter Julia, of which he alone seems to have been long before ignorant. The indignation he conceived at this disgrace induced him to treat with great severity herself, and all her gallants and confidants, some of whom he put to death, and banished others.

Some troubles in Armenia, which succeeded, caused Caius Cæsar to be sent into the east, where he remained some years; but at length, A. D. 3, he received a wound which proved fatal. His brother Lucius had died some time before at Marseilles. Octavianus therefore recalled Tiberius from his unhonored residence at Rhodes, and adopted him, some months after the death of Caius. He also adopted his remaining grandson,

Agrippa Posthumus; but the intractable disposition and gross understanding of this youth caused him afterwards to annul the adoption and send him into exile. A daughter of Julia, of the same name, followed her mother's example, and some years afterwards was similarly punished. The poet Ovid was, it is said, in an unknown manner involved in her crime, and was on that account exiled to the mouth of the Danube, whence all his adulation could not procure his recall. These unworthy descendants were the source of bitter affliction to Augustus, who never named them without a sigh, and often repeated a verse from Homer, expressing a wish that he had lived in celibacy and died childless.

The year 4 was distinguished by an act of clemency which confers great honor on the character of Augustus:—Cinna, grandson of Pompey, a man of rank and great opulence, but of little merit, had formed a conspiracy against the emperor's life. Every thing was prepared for its execution, when the whole was disclosed by one of the persons engaged in it. Octavianus, by the advice of Livia, sent for Cinna to his closet, and after enumerating all the favors he had conferred upon him, charged him with the ingratitude of his design, at the same time repeating so many circumstances of the plot that Cinna could not doubt of its discovery. He proceeded to say that, being still more desirous of having him for a friend than punishing him as an enemy, he freely forgave him for all that was past, and should rely upon his future fidelity. Cinna, penetrated with compunction, and overcome by the emperor's goodness, was converted into one of his most zealous friends. Augustus named him consul for the next year; and Cinna, at his death, appointed the emperor his sole heir. Such was the effect of this conduct that this was the last conspiracy formed against him.

Various domestic regulations, and war renewed in Germany and Pannonia, which exercised the military talents of Tiberius and Germanicus, are the principal events of some succeeding years. The encouragement of matrimony, and suppression of celibacy, was a point much labored by the emperor; and a famous law, called the Papian-Poppæan (from the consuls of the year) was passed for this purpose, appointing great privileges and exemptions for the married, and penalties and disabilities for the single.

The year 9 was rendered black in the Roman annals by the destruction of Varus and three entire legions in Germany, where Arminius had formed a powerful confederacy against the power of Rome. The standards and two of the eagles fell into the hands of the enemy, who took a pride in aggravating the loss by every species of insult and indignity. This disaster nearly overcame all the fortitude of Augustus, accustomed to glory and prosperity. He put on mourning, suffered his hair and beard to grow, and frequently exclaimed, in a paroxysm of grief and despair, 'Varus, restore me my legions!' The sense of danger from a martial and inveterate foe was added to that of disgrace. Tiberius, however, by his military skill, repressed the ravages of the Germans, and in a great measure wiped off the ignominy. By his conduct he obtained the favor

and confidence of Octavianus to such a degree that he was elevated to an equal share of the imperial authority. One of the most remarkable of the remaining acts of Augustus was a tyrannical law rendering all libels and defamatory writings criminal, and subjecting the authors to the penalties of high treason.

His advanced age and declining health now rendered him studious of repose, and he devolved the principal cares of empire upon Tiberius. It is said, however, that he manifested a returning affection to his grandson Agrippa Posthumus, which alarmed Livia and her son; and Livia has been suspected of hastening the death of the emperor, on this account, by poison. But the progress of his malady is a sufficient refutation of this mere suspicion. It was a weakness of the stomach and bowels; and he was seized with it as he was conducting Tiberius towards Illyrium. On his return towards Rome his complaint increased, and obliged him to stop at Nola, where he took to his bed and patiently waited the approach of death. On the last day of his life he called for a mirror; he had his head dressed; and then calling his friends to his bed-side, asked them whether they did not think he had acted his part pretty well in the comedy of human life? and then addressed them in a Greek verse, with which they generally closed their plays:

Δοτε κροτον, και παντες υμεις μετα χαρας κτυπησα.

Clap your hands, and let all applaud with joy.

After this kind of comic adieu, he ordered every body to retire, and died in Livia's arms, saying, *Livia, conjugii nostri memor, vive et vale.* His death took place on the 10th of August A. D. 14, A. U. C. 767, and in the seventy-sixth year of his age. The duration of his power, if we reckon from the time of the triumvirate, of which he took possession the 27th of November, in the year of Rome 711, B. C. 43, was about fifty-six years. If we reckon from the battle of Actium, fought the 2d of September, in the year of Rome 721, B. C. 31, when his sole possession of the Roman empire properly commences, Augustus will then appear to have enjoyed the sovereign power about forty-four years.

Crevier states the true time of his becoming emperor to have been the 7th of January, in the year of his seventh consulship, which, according to his reckoning, was the 725th of Rome, and, referring his death to the 765th of Rome, he governed as prince and emperor forty years, seven months, and thirteen days. 'All the rest,' he says, 'was manifest usurpation and tyranny.' Josephus, and others after him, compute the beginning of the reign of Augustus from the year in which Cæsar was killed, A. U. C. 710, B. C. 44, and make its duration fifty-seven years, six months, and some odd days. Ptolemy in his canon, and St. Clement of Alexandria, date the commencement of his reign in the year after the battle of Actium, A. U. C. 724, and compute its duration to be forty-three years.

Before the funeral of Augustus his will was presented to the senate-house by the vestal virgins, in whose custody it had been deposited, and read aloud by Polybius, one of his freedmen. By this will, made sixteen months before his

death, Tiberius and Livia were appointed his first heirs, his grand-children and their children his second, and the great men of Rome his third heirs. Livia was adopted into the Julian family, and honored with the title of Augusta. He bequeathed as a legacy 40,000,000 of sesterces (about 5,000,000 of livres) to the Roman people; 3,500,000 (437,500 livres) to the tribes, that is 100,000 (12,500 livres) to each; to each of his guards 1000 sesterces (125 livres); to each of the soldiers appointed to guard the city 500 sesterces (sixty-two livres); and to each legionary soldier 300 sesterces (thirty-seven livres).

Gibbon has given the following sketch of the character and history of Augustus:—'The tender respect of Augustus for a free constitution, which he had destroyed, can only be explained by an attentive consideration of the character of that subtle tyrant. A cool head, an unfeeling heart, and a cowardly disposition, prompted him, at the age of nineteen, to assume the mask of hypocrisy, which he never afterwards laid aside. With the same hand, and probably with the same temper, he signed the proscription of Cicero and the pardon of Cinna. His virtues, and even his vices, were artificial, and according to the various dictates of his interest, he was at first the enemy, and at last the father of the Roman world. When he framed the artful system of the imperial authority his moderation was inspired by his fears. He wished to deceive the people by an image of civil liberty, and the armies by an image of civil government.

'In the exercise of that sovereign and absolute power which he acquired, by means which none can attempt to justify, and which he contrived most effectually to secure by apparent moderation and self-denial, he seems to have been solicitous for making the people contented and happy; and in many respects he was entitled to the character of a wise and equitable governor. 'As a compensation for liberty, he gave his subjects security, ease, prosperity, and all the advantages of high civilisation, with as little as possible of the severity of restraint and coercion. He filled Rome and all Italy with improvements of every kind: made highways, constructed harbours, raised edifices for use and convenience, and could boast that he received a capital of brick, and left one of marble. He so encouraged letters that one of the great ages of excellent human productions takes its name from him.' Those whom he encouraged by his liberality repaid him with an adulation which was not honorable to themselves, and which made no addition to his reputation. The love of flattery, however, is not charged upon him as one of his predominant foibles. In private life he had many estimable qualities. Affectionate to his family and friends, condescending and indulgent to his domestics and dependents, frugal and sober with regard to every indulgence, one excepted, which regarded himself, he commanded affection and respect. But his disposition to gallantry and licentiousness in his conduct towards the female sex exposed him to just censure and reproach; nor did the counsel of his friends, nor the wisdom of experience, avail to the due restraint of his cri-

minal passions. Sometimes indeed, it has been said, his intrigues were the result of that policy which directed his general conduct, as they served to discover secrets of state, and to obtain information concerning any plot or sedition that might have been formed by the husbands of those wives with whom he was connected. In other respects he paid a high regard to external decorum; and, whatever might have been his sentiments with regard to religion in early life, he appears in maturer and more advanced age to have been much inclined to superstition.

OCTA'VO, *adj.* & *n. s.* Lat. *octavo*. Applied to a page or leaf constituting the eighth part of a sheet.

They accompany the second edition of the original experiments, which were printed first in English in *octavo*. *Boyle.*

Lord C—'s works most resplendently bound in *octavo*, form a conspicuous ornament to his book shelves.

The rest is all but leather and prunella.

Byron.

OCTEN'NIAL, *adj.* } Lat. *octennium*, *octo-*
OCTOG'ENARY. } *geni.* Happening every
eighth year; lasting eight years: octogenary is,
of eighty years of age.

OCTO'BER, *n. s.* Lat. *october*. The eighth month in the year; also a name given to ale brewed in that month.

October is drawn in a garment of yellow and carnation; upon his head a garland of oak leaves, in his right hand the sign scorpio, in his left a basket of services. *Peacham.*

Nor wanting is the brown *October* drawn
Mature and perfect, from his dark retreat
Of thirty years, and now his honest front
Flames in the light refulgent, not afraid
Even with the vineyard's best produce to vie.

Thomson.

OCTOBER, in chronology, was the eighth month of Romulus's year, which the name implies; but the tenth in the kalendar of Numa, Julius Cæsar, &c. The senate gave this month the name Faustinus, in compliment to Faustina, the wife of the emperor Antoninus; Commodus would have it called Invictus; and Domitian named it Domitianus. This month was sacred to Mars, and under his protection.

OCTOBRIS EQUUS, a horse annually sacrificed to Mars in October, because the horse is a warlike animal. A race was run with chariots drawn by two horses, previous to the sacrifices, and he that ran quickest was adjudged to be the victim.

OCTONARY, *adj.* } Lat. *octonarius*, *octu-*
OCTUPLE. } *plus.* Belonging to the
number of eight; eightfold.

OCTONOCULAR. Latin *octo* and *oculus*. Having eight eyes.

Most animals are binocular; spiders for the most part *octonocular*, and some *senocular*. *Derham.*

OCTOPETALOUS, *adj.* Gr. *οκτω* and *πεταλον*. Having eight flower leaves.

OCTOSTYLE. Gr. *οκτω* and *στυλος*. In architecture, the face of a building having eight columns.

OCULAR, *adj.* } Fr. *oculaire*, of Lat.
OCULARLY, *adv.* } *oculus*. Relating to, or
OCULATE, *adj.* } seen by, the eye: ocu-
OCULIST, *n. s.* } larly, visibly by the eye:
OCULUS BELI, *n. s.* } oculate is, having eyes;
 having perception by the eye: oculist, he who
 studies or professes to cure diseases of the eye:
oculus belli, Woodward will define.

Prove my love a whore,
 Be sure of it; give me the *ocular* proof,
 Or thou hadst better have been born a dog.

Shakespeare.

If there be a speck in the eye, we take it off; but
 he were a strange *oculist* who would pull out the eye.

Bacon.

He that would not believe the menace of God at
 first, it may be doubted whether before an *ocular*
 example he believed the curse at first. *Brown.*

The same is *ocularly* confirmed by Vives upon
Id.

The *oculus belli* of jewellers, probably of Pliny, is
 an accidental variety of the agate kind; having a
 grey horny ground, circular delineations, and a spot
 in the middle, resembling the eye; whence its name.
Woodward.

OCULUS BELI, in li.hology, one of the se-
 mipellucid gems, of a grayish-white color, varie-
 gated with yellow and with a black central nu-
 cleus: it is of a roundish form, and its varia-
 gations very beautifully represent the pupil and
 iris of the eye: whence the name. It seems to
 be a species of opal.

OCUMARA, a bay of Venezuela, Colombia,
 five leagues east of Porto Cabello, and about
 twenty-eight miles S.S.E. of the city of Ca-
 racas. Its port is good and is defended on the
 east by a battery mounting eight pieces of cannon.
 The town, at the distance of one league from the
 port, is watered by a river of the same name,
 which discharges itself into the bay.

OCYUM, basil, a genus of the gymno-
 spermia order, and didynamia class of plants;
 natural order forty-second, verticillatæ: CAL.
 upper lip orbiculated, inferior one quadrifid:
 cor. resupinated, with one lip quadrifid, the
 other undivided; the exterior filament sends out
 a reflected process at the base. There are eight
 species, all natives of warm climates, rising from
 six inches to two feet in height, and having a
 strong aromatic smell, resembling that of cloves.
 One species is used in the kitchen in soups and
 sauces. It rises about ten inches high, sending
 out branches by pairs opposite, from the bottom;
 the stalks and branches are four-cornered; the
 leaves are oval, spear-shaped, ending in acute
 points, and are indented on their edges; the
 whole plant is hairy, and has a strong scent of
 cloves, too powerful for most persons, but to some
 it is very agreeable. These plants are propagated
 by seeds, will thrive in this country in the open
 air, and will even ripen their seeds if placed in
 a stove or airy glass-case.

OCZAKOV, a town of the government of
 Cherson, European Russia, near the mouth of
 the river Dnieper. This place was never of great
 size; and, since the building of Odessa, its trade
 and population have greatly dwindled; but the
 Russians and Turks have often disputed its pos-
 session. In 1737 it was attacked by the former
 under count Munich, and carried by assault.

Being afterwards abandoned, it was fortified by
 the Turks; and in 1788 attacked again by a
 Russian army under prince Potemkin, who did
 not take it till after a delay of six months, and a
 great sacrifice of lives. The restoration of this
 place to Turkey by Russia, formed the alleged
 motive for the interference of the British go-
 vernment against the latter power in 1790. It
 is fifty-four miles west by south of Cherson.

ODA-BACHI, or **ODDABASSI**, an officer in the
 Turkish soldiery, equivalent to a serjeant or cor-
 poral among us. The common soldiers and ja-
 nissaries, called *oldachis*, after having served a
 certain term of years, are always preferred and
 made *biquelairs*; and of *biquelairs* in time be-
 come *odabachis*, i. e. corporals of companies, or
 chiefs of certain divisions, whose number is not
 fixed being sometimes ten and sometimes
 twenty. Their pay is six doubles per month;
 and they are distinguished by a large felt, a foot
 broad and above a foot long, hanging on the
 back, with two long ostrich feathers.

ODD, *adj.* } Arab. *uhud*; Swed. *udda*;
ODD'LY, *adv.* } Goth. *eitt* (one). Sole; single;
ODD'NESS, *n. s.* } not divisible by two; not even
ODDS, *n. s.* } or twofold; hence singular;
 particular; unusual; uncouth; unnoticed; strange;
 unlucky (see the instance from Shakespeare); but
 some learned gossips in 'luck' consider the odd
 a lucky number: oddly and oddness follow all
 the above senses: odds is used to express in-
 equality; excess on either side of a comparison;
 more than even in a wager; more likely than
 otherwise; hence advantage; superiority; also,
 from the notion of strangeness, uncouthness, it
 signifies difference amounting to dispute; de-
 bate; quarrel.

The odd man to perform all three perfectly is,
 Joannes Sturmius. *Ascham's Schoolmaster.*

The case is yet not like, but there appeareth great
 odds between them. *Spenser on Ireland.*

Between these two cases there are great odds.
Hooker.

This is the third time; I hope
 Good luck lies in odd numbers. *Shakespeare.*

The trust Othello puts him in,
 On some odd time of his infirmity,
 Will shake this island. *Id. Othello.*

There are yet missing some few odd lads that you
 remember not. *Id. Tempest.*

How oddly will it sound, that I
 Must ask my child forgiveness. *Id.*

I will lay the odds that ere this year expire,
 We bear our civil swords and native fire
 As far as France. *Id. Henry IV.*

The fox, the ape, and the humble bee,
 Were still at odds, being but three;
 Until the goose came out of door,
 And staid the odds by adding four. *Shakespeare.*

Her madness hath the oddest frame of sense,
 Such a dependency of thing on thing,
 As e'er I heard in madness.

Shakespeare. Measure for Measure.

The account of the profits of Ulster, from the
 fifth year of Edward III. until the eighth, do amount
 but to nine hundred and odd pounds.

Davies on Ireland.

Shall I give him to partake
 Full happiness with me? or rather not,
 But keep the odds of knowledge in my power
 Without co-partner? *Milton's Paradise Lost.*

And tho' the sword, some understood,
In force had much the *odds* of wood,
'Twas nothing so; both sides were balanced
So equal, none knew which was valiant'st.

Hudibras.

What verity there is in that numeral conceit, in the lateral division of man by even and *odd*; ascribing the *odd* unto the right side, and the even unto the left; and so, by parity or imparity of letters in men's names, to determine misfortunes. *Browne.*

Cromwell, with *odds* of number and of fate,
Removed this bulwark of the church and state.

Waller.

The year, without regard to days, ends with an *odd* day and *odd* hours, *odd* minutes, and *odd* seconds of minutes; so that it cannot be measured by any even number of days, hours, or minutes. *Holder.*

Coveting to recommend himself to posterity, Cicero begged it as an alms of the historians, to remember his consulship; and, observe the *oddness* of the event, all their histories are lost, and the vanity of his request stands recorded in his own writings.

Dryden.

The dreams of sleeping men are made up of the waking man's ideas, though for the most part *oddly* put together. *Locke.*

All these, thus unequally furnished with truth, and advanced in knowledge, I suppose of equal natural parts; all the *odds* between them has been the different scope that has been given to their understandings to range in. *Id.*

When I broke loose from writers who have employed their wit and parts in propagating of vice, I did not question but I should be treated as an *odd* kind of a fellow. *Spectator.*

Mr. Locke's Essay would be a very *odd* book for a man to make himself master of, who would get a reputation by critical writings. *Id.*

Sixteen hundred and *odd* years after the earth was made, it was destroyed in a deluge of water.

Burnet's Theory.

Since every man by nature is very prone to think the best of himself, and of his own condition, it is *odds* but he will find a shrewd temptation. *South.*

No fool Pythagoras was thought;
He made his list'sing scholars stand,
Their mouth still covered with their hand:
Else, may be, some *odd* thinking youth,
Might have refused to let his ears
Attend the musick of the spheres. *Prior.*

As masters in the clare obscure,
With various light your eyes allure:
A flaming yellow here they spread;
Draw off in blue, or charge in red;
Yet from these colours *oddly* mixed,
Your sight upon the whole is fixed. *Id.*

One man is pressed with poverty, and looks somewhat *oddly* upon it. *Collier on the Spleen.*

A knave is apprehensive of being discovered; and his habitual concern puts an *oddness* into his looks. *Collier.*

This blue colour, being made by nothing else than by reflection of a specular superficies, seems so *odd* a phenomenon, and so difficult to be explained by the vulgar hypothesis of philosophers, that I could not but think it deserved to be taken notice of.

Newton's Opticks.

Patients have sometimes coveted *odd* things which have relieved them; as salt and vinegar. *Aruthnot.*

Fossils are very *oddly* and elegantly shaped, according to the modification of their constituent salts, or the cavities they are formed in. *Bentley.*

So proud I am no slave,
So impudent I own myself no knave,
So *odd*, my country's ruin makes me grave. *Pope.*

The presbyterian party endeavoured one day to introduce a debate about repealing the test clause, when there appeared at least four to one *odds* against them. *Swift.*

They had seen a great black substance lying on the ground very *oddly* shaped. *Id.*

My wife fell into a violent disorder, and I was a little discomposed at the *oddness* of the accident. *Id.*

To counterpoise this hero of the mode,
Some for renown are singular, and *odd*;
What other men dislike is sure to please
Of all mankind these dear antipodes. *Young.*

SIR BENJ.—Oh lud, ma'am, how very *odd*, but that is the reason it was believed at once. *Sheridan.*

ODE, n. s. Gr. ὠδή; Latin *ode*. A lyric poem; a poem set to music. See below.

A man haunts the forest that abuses our young plants with carving Rosalind on their barks; hangs *odds* upon hawthorns, and elegies on brambles, all forsooth deifying the name of Rosalind.

Shakespeare.

O run, prevent them with thy humble *ode*,
And lay it lowly at his blessed feet. *Milton.*

He would an elegy compose,
On maggots squeezed out of his nose;
In lyric numbers wrote an *ode* on
His mistress eating a black pudden.

Butler's Hudibras.

What work among you scholar gods!
Phœbus must write his am'rous *odes*;
And thou, poor cousin, must compose,
His letters in submissive prose. *Prior.*

However, I have some *odes* and love-elegies, which, when I am favoured with the lady's name for whom they are to be written, I intend to give to the public.

Sheridan.

Laugh when I laugh, I seek no other fame,
The cry is up, and scribblers are my game;
Speed Pegasus, ye strains both great and small,
Ode, epic, elegy, have at ye all. *Byron.*

ODE. Among the ancients the ode signified no more than a song, but with the moderns they are reckoned different compositions; the ode being usually appropriated to grave, lofty, and solemn subjects. Horace has pointed out the subjects proper for both, in few words:—

Gods, heroes, conquerors, Olympic crowns,
Love's pleasing care, and the free joys of wine,
Are proper subjects for the Lyric song.

It was also employed, not only to praise the Almighty for bounties received, but to solicit him in time of trouble, as is plain from the odes written by king David, Asaph, &c., and collected by Ezra into the books of Psalms. Many other nations imitated the Israelites in songs of praise and petitions addressed to their deities. This afterwards gave rise to the custom of the heathen poets invoking the Muses; still ridiculously kept up by modern Christian poets, as if these ideal deities of Parnassus had a real existence.

This fancied inspiration led the ancient lyric poets to indulge in a more unbounded liberty in this than in any other species of poetry; soaring in sudden transitions, bold digressions, and lofty excursions, sometimes away from their subject altogether. But Pindar, the most daring and lofty of all the lyric poets, in his sublimest flights, and amidst all his raptures, returning to his subject again, has preserved harmony, and often uniformity in his versification; yet so great is his variety of measures that the traces of

ness are hardly perceptible; and this is one of the excellencies for which he is admired, and which, though seemingly void of art, requires so much, that he has seldom been successfully imitated.

ODENATUS, a celebrated prince of Palmyra. He very early inured himself to bear fatigues, and, by hunting leopards and wild beasts, accustomed himself to the labors of a military life. He was a faithful friend to the Romans; and, when Aurelian was taken prisoner by Sapor king of Persia, Odenatus solicited his release, by writing to the conqueror, and by sending him presents. The Persian tyrant was offended at this liberty, tore the letter, and ordered the presents to be thrown into a river; and commanded Odenatus to appear before him, on pain of being devoted to instant destruction. Odenatus despised this haughty summons, and opposed force by force. He obtained considerable advantages over the troops of Sapor, and took his wife prisoner, with a great booty. In return for these services Gallienus, then emperor, named Odenatus his colleague, and gave the title of Augustus to his children and of Augusta to his wife, the celebrated Zenobia. On his return from this expedition he marched against the Goths or Scythians, who had invaded Asia, and obliged them to make a hasty retreat. Shortly after this he fell a victim to domestic treason. His nephew Maonius, when hunting with him, presumed to throw his javelin before that of his uncle; and though reproved repeated the offence. Odenatus, provoked at this show of insolence, took away his horse, a mark of infamy among the barbarians, and ordered the youth into confinement. The offence was soon forgotten, and Maonius restored, but the punishment was remembered, and he caused his uncle to be assassinated in the midst of an entertainment, at Emessa, about A.D. 267, and Zenobia succeeded him. See **PALMYRA**.

ODENSEE, a town of Denmark, the capital of Funen, is situated on a river which runs into a large bay of that island about a mile from the town. It is a bishop's see, and though not large is of note for its manufactures, chiefly of woollens, leather, and soap. Here are an old palace, cathedral, and several churches worth notice. The Danish language is spoken with great purity, and education is well attended to. At a diet held here, in 1528, the Protestant discipline of the Danish church was settled. Population 6000. Eighty-six miles W. S. W. of Copenhagen, and sixty-eight N. N. E. of Sleswick.

ODEON, or **ODEUM**, in ancient architecture Gr. ὀδεῖον, from ὀδῆ a song, a name given among the Greeks to a species of theatre in which the poets and musicians submitted their works to the approval of the public, and disputed for prizes. This, however, it is probable was not the original object for which Pericles built that at Athens, which served as a magazine wherein to deposit all the paraphernalia used in religious and other solemn processions, and had likewise another destination, namely that of offering under its portico a shelter to the spectators assembled in the theatre of Bacchus (by the side of which it was erected) in case of surprise from bad weather:

It was not, apparently, until a later period that the odeon became itself a theatre or saloon for the purposes of music and declamation. Sometimes, even, it is said to have been used by the Archontes, as a council-house in which they dispensed justice.

The form of the odeons resembled that of other theatres, except that they were inferior in point of extent, and were covered with a roof. The inside of that built by Pericles, before alluded to, was filled with seats and ranges of pillars, and on the outside the roof descended shelving downwards from a point in the centre, with many bendings, in imitation of a famous pavilion of the king of Persia. Vitruvius is of opinion that the roof of this building was constructed of the masts or sail-yards of Persian ships which the Athenians had taken in their war with that people.

ODER, a considerable river of Germany and the Prussian states, rises in Moravia, about eighteen miles north-east of Olmutz, enters Silesia, and flows through that province, Brandenburg, and Pomerania, where it forms the large maritime lake called the Haff, and runs into the Baltic by three mouths, the Peene, the Swine, and the Divensa. These streams form here two large islands called Usedom and Wollin. In Silesia this river has a very rapid course; but, on reaching the level ground, this impetuosity diminishes; but it here frequently overflows its banks. It becomes navigable for small boats at Ratisbon, and vessels of fifty tons reach Breslau: it receives numerous tributaries, and communicates by canals with both the Elbe and the Vistula. Breslau, Frankfort, and Stettin are on its banks.

ODERICO (Gasper Lewis), a learned Genoese antiquary and medallist, entered early into the society of the Jesuits, and going to Rome became professor of theology. He was admitted a member of the Etruscan academy of Cortona, under the name of Theodemio Ostracino. On the suppression of his order he retired to his native city, where he was made conservator of the university library. In 1787 he went to Turin with his brother, to conduct some negotiations, and remained there six years. The revolution deprived him of his office at Genoa, but on the reorganisation of the university he was replaced, and chosen a member of the Institute. He died December 10th, 1803, of apoplexy, aged seventy-eight. He published several valuable works on ancient medals and inscriptions; and left in MS. *Notizie istoriche sulla Taurica fino all' anno 1475*, written at the request of the empress Catherine.

ODEYPOOR, a fertile Hindoo principality in the province of Ajmeer, of which it occupies the south-eastern quarter, and situated between 24° and 26° of N. lat. It yields sugar, indigo, cotton, and the grains of India: it also produces mines of iron and sulphur. It formerly bore the appellation of Mewar; and its chief, who is of the Rajpoot, or military tribe, is descended of the most ancient and honorable family in Hindostan, frequently denominated in history the Ranahs of Chitore. The present territories of this prince are estimated at 110 miles in length by seventy in breadth. The lands are held on a sort

of feudal system, every Rajpoot being a soldier by profession; but, owing to the frequent inroads of the Mahrattas, the revenues have been greatly diminished. The cultivators of the soil are Hindoos, of the tribes of Brahmin, Jaut, Bheel, and Rajpoot; the weapons of the latter, which he frequently carries into the fields with him, while ploughing, &c., are a lance, sword, matchlock, or bow and arrow. The cattle here are smaller than in the neighbouring countries; but they breed a number of sheep and camels.

ODEYPOOR, the capital of the above district, is situated on the south side of the Banass, in an amphitheatre of hills. It can only be approached through three narrow defiles, barely wide enough to admit a carriage. When, in the beginning of the fourteenth century, Chitore, the former capital, was taken by the Mahometans, the royal family took refuge in this place, and the alliance of the Ranah has been always sought by the neighbouring Hindoo princes. Through his alliance with the British he has been enabled to throw off the Mahratta yoke. Long. $74^{\circ} 5' E.$, lat. $25^{\circ} 28' N.$

ODESSA, a thriving modern sea-port of Southern Russia, in the government of Cherson, stands on a bay of the Black Sea between the mouths of the Dniester and Dnieper. Russia, it is well known, particularly after her acquisitions in south-east Poland, had long looked for an establishment in this direction. At the peace of Jassy Catherine II. fixed in 1792 on this place, then called Kodjabeg, and consisting of only a few houses. But without having a river it has a fine bay, with sufficient depth of water almost to the edge for large ships of war. Its bottom is of fine sand or gravel, and it is hardly ever frozen. The public works were quickly constructed, and the emperor Alexander followed up the views of Catharine, and greatly benefited the new town by the judicious selection of the duke of Richelieu, at that time a French emigrant nobleman, as its governor. Under his superintendence a number of excellent establishments were set on foot, under the patronage of the government. In 1804 the population had risen to 15,000; and when Dr. Lyall was here in 1824 to 40,000.

Odessa stands in lat. $46^{\circ} 29' 30'' N.$, and long. $30^{\circ} 45' 22''$, as astronomically ascertained, on the declivity of a considerable eminence in the south-west of the bay of Adschai, and in the midst of a number of fertile plains. The streets are laid out with great regularity and generally intersect each other at right angles; some are very long, but all of them unpaved: the houses are not generally contiguous but separated by a portion of garden ground. They are neatly built of stone, with roofs of wood, or sheets of iron, the stone of which they are constructed being the same as the rock on which the town is built,—a semi-indurated limestone, exhibiting throughout its entire mass an assemblage of small cockle-shells, tinged with an iron oxide. Odessa contains seven churches, an admiralty court, a custom-house, hospital, theatre, several inns, a lyceum, and schools for trade and navigation, and for the instruction of girls. The air is pure and remarkably wholesome; but it labors under the want of

fresh water. A large export trade in corn is conducted with England, France, Spain, Italy, the Levant, and Germany. The articles of importation are wines, liqueurs, tobacco, cotton stuffs, cloth, perfumes, shawls, oil, spices, porcelain, and paper. Other exports latterly have been butter, caviare, tallow, hog's-lard, ironmongery from Tula, furs, &c. About 800 vessels arrive annually; 400 of which are British. The villages in the neighbourhood produce the rarities in the south of Russia, of butter and cheese, potatoes, and remarkably fine melons. The mutton here is also very fine. Fuel is scarce; and bundles of weeds, and cow-dung, are used as a substitute.

The Greek inhabitants are the most numerous: and are chiefly retail merchants and workmen. The Russians are principally servants: the most wealthy and powerful are the French, English, and Germans. Jews abound, but they are mostly poor. The corn brought hither from the Ukraine and neighbouring provinces is conveyed chiefly in carts or waggons drawn by oxen, which travel in companies, and stop at intervals, to let the oxen feed in the steppes or vast natural pastures of the road, so that the expense of carriage is trifling. In summer several hundred waggons arrive in the town in a single day. Other articles produced in the Ukraine, and exported at Odessa, are tallow, hides, flax, and timber. Brewing and distilling are carried on on a large scale; and there are manufactures of woollens, silk, gunpowder, and soap. The great disadvantages hitherto have been the want of water, of mechanics for the town, and of farmers for the surrounding district. The government has spared no expense to procure all of these; and those who fix on the country round Odessa are allowed a house, a pair of oxen, a plough, a little money, and an exemption, during twenty-five years, from all taxes and military service.

ODIN, in Saxon mythology, called also in the dialect of the Anglo-Saxons Woden, or Wodan, a name given by the ancient Scythians to their supreme god.

ODIN, in Saxon history, a name assumed about A. A. C. 70 by Sigge, a Scythian prince, who conquered the northern nations, made great changes in their government, manners, and religion, enjoyed great honors, and had even divine honors paid him. According to the account given of this conqueror by Snorro, the ancient historian of Norway, and his commentator Torsæus, Odin was a Scythian, who withdrew himself, with many others in his train, by flight, from the vengeance of the Romans, under Pompey; and, having officiated as priest in his own country, he assumed the direction of the religious worship, as well as the civil government, of the nations which he conquered. Having subdued Denmark, Sweden, and Norway, he retired to Sweden where he died. Dr. Henry gives this account of him: 'Odin is believed to have been the name of the one true God among the first colonies who came from the east and peopled Germany and Scandinavia, and among their posterity for several ages. But at length a mighty conqueror, the leader of a new army of adventurers from the east, over-run the north of Europe, erected a great empire, assumed the name of Odin, and claimed the ho-

nors which had been formerly paid to that deity. From thenceforward this deified mortal, under the name of Odin or Wodin, became the chief object of the idolatrous worship of the Saxons and Daues in this island, as well as of many other nations. Having been a mighty and successful warrior, he was believed to be the god of war, who gave victory, and revived courage in the conflict. Having civilised, in some measure, the countries which he conquered, and introduced arts formerly unknown, he was also worshipped as the god of arts and artists. He was at the same time a priest, a soldier, a poet, a monarch, and a victor. He imposed upon the credulity of his superstitious countrymen, and made them believe that he could raise the dead, and that he was acquainted with futurity. When he had extended his power and increased his fame by conquest and by artifice, he determined to die in a different way from other men. He assembled his friends, and with the sharp point of a lance he made in his body nine different wounds in the form of a circle; and, when expiring, he declared that he was going to Scythia, where he should become an immortal god. He added that he would prepare bliss and felicity for those of his countrymen who lived a virtuous life, who fought with bravery, and who died like heroes in the field of battle. These injunctions had the wished-for effect: his countrymen superstitiously believed him, and constantly recommended themselves to his protection when they engaged in battle; and they entreated him to receive the souls of such as fell in war. In a word, to this Odin his deluded worshippers impiously ascribed all the attributes which belong only to the true God; to him they built magnificent temples, offered many sacrifices, and consecrated the fourth day of the week, which is still called by his name Woden's day, or Wednesday, in England and in all the other countries where he was formerly worshipped. Notwithstanding all this, the founders of all the kingdoms of the Anglo-Saxon heptarchy pretended to be descended from Wodin, and some of them at the distance only of a few generations. His wife's name was Frea. See MYTHOLOGY. Gräter, with great boldness, insists that the island Sams, mentioned in the Edda, is the Samos of the Archipelago; and, from some faint resemblance between the Gothic cosmogony and that of a Samian philosopher, he infers Odin to have been a pupil of Melissus; and thus he throws back his antiquity to a period which would make it probable that the Scythian kings of Herodotus are the heroes deified in Gothic song. Mallet defends the equally wild conjecture that the arms of Pompey occasioned Odin to migrate from the Euxine to the Baltic. In this case, Pliny and Tacitus would have met with traces of his progress among the nations whom they describe. Extensive recent conquests, terminating in the imposition of a new religion, could not but live in the memory even of barbarians. It is therefore most probable that Odin is posterior to these writers, and that the Anglo-Saxon historians are correct, who describe Hengist as fifth in descent from Odin, and who have preserved the intervening pedigree. An interval of 125 years would then be

sufficient to allow between Odin himself and his grandson Vecta's great-grandson, Hengist. This would place Odin in the year of Christ 325, about seventy years before Alaric, and would plausibly account for the momentous impulse which, about that time, propelled the Gothic multitudes against all the provinces of the Roman empire.

Odin is called in the Edda, and by Snorro, Runhofdi and Runomfauthr, father of letters, king of spells, as the poets phrase it; which favors the opinion that he introduced the art of writing among the Goths. Now Tacitus expressly pronounces the alphabet to have been unknown to the Germans; *litterarum secreta viri pariter ac fœminæ ignorant*; Odin, then, must have lived subsequently to this period. The oldest Runic inscriptions on stone commemorate the fortunes of soldiers who had served at Constantinople in the corps of Varangi; and the art of stone cutting in the north is therefore posterior to the transfer of the seat of empire from Rome to Constantinople. Now Odin, according to Snorro, first introduced the practice of using grave-stones: in his time, no doubt, they were simply inscribed, not engraved: but these cannot long have preceded the more permanent memorials. This circumstance, again, tends to corroborate a chronology which places Odin at the beginning of the fourth century.

De ODIO ET ATIA. The writ *de odio et atia* was anciently directed to the sheriff, commanding him to enquire whether a prisoner charged with murder was committed upon just cause of suspicion, or merely propter odium et atiam, for hatred and ill-will; and if upon the inquisition due cause of suspicion did not then appear, then there issued another writ for the sheriff to admit him to bail. This writ, according to Bracton, ought not to be denied to any man; it being expressly ordered to be made out gratis, without any denial, by magna charta, c. 26, and stat. Westm. 2. 13, Edw. I. c. 29. But the statute of Gloucester, 6 Edw. I. c. 9, restrained it in the case of killing by misadventure or self-defence; and the statute 28 Edw. III. c. 9 abolished it in all cases whatsoever; but, as the stat. 42 Edw. III. c. 1 repealed all statutes then in being contrary to the great charter, Sir Edward Coke is of opinion that the writ *de odio et atia* revived. See HABEAS CORPUS.

O'DIOUS, adj. } *Fr. odieux; Lat. odiosus,*
O'DIOUSLY, adv. } *odium.* Hateful; invidious;
O'DIOUSNESS, n. s. } *ous; exposed to, or caus-*
O'DIUM. } *ing hate: odiously and*
 odiousness follow these senses: odium, quality or state of provoking hatred; hence invidiousness; disrepute; badness of character; opprobrium.

There was left of the blood royal an aged gentleman of approved goodness, who had gotten nothing by his cousin's power but danger from him, and *odiousness* for him. *Sidney.*

Another means for raising money was, by inquiring after offences of officers in great place, who, as by unjust dealing they became most *odious*, so, by justice in their punishment, the prince acquired both love and applause. *Hayward.*

The *odium* and offences which some men's rigour

or remissness had contracted upon my government, I was resolved to have expiated. *King Charles.*

He had rendered himself *odious* to the parliament. *Clarendon.*

The seventh from thee,
The only righteous in a world perverse,
And therefore hated, therefore so beset
With foes, for daring single to be just,
And utter *odious* truth, that God would come
To judge them with his saints.

Milton's Paradise Lost.

Had thy love, still *odiously* pretended,
Been as it ought, sincere, it would have taught thee
Far other reasonings. *Milton's Agonistes.*

Harsh speech rendereth advice *odious* and unsavoury to the receiver. *Barrow.*

Let not the Trojans, with a feigned pretence
Of proffered peace, delude the Latian prince:
Expel from Italy that *odious* name. *Dryden.*

Arbitrary power no sober man can fear, either
from the king's disposition or his practice; or even
where you would *odiously* lay it, from his ministers. *Id.*

She threw the *odium* of the fact on me,
And publicly avowed her love to you. *Id.*

For ever all goodness will be most charming; for
ever all wickedness will be most *odious*. *Sprat.*

Hatred is the passion of defence, and there is a
kind of hostility included in its very essence. But
then, if there could have been hatred in the world,
when there was scarce any thing *odious*, it would
have acted within the compass of its proper object. *South.*

Projectors, and inventors of new taxes, being
hateful to the people, seldom fail of bringing *odium*
upon their master. *Davenant.*

She breathes the *odious* fume
Of nauseous steams, and poisons all the room. *Granville.*

Green fields, and shady groves, and crystal springs,
And larks, and nightingales, are *odious* things;
But smoke, and dust, and noise, and crowds, delight. *Young.*

MAR. Such reports are highly scandalous.

MRS. C. So are they child, shameful, *odious*. But
the world is so censorious no character escapes. *Sheridan.*

ODO, or ST. ODO, second abbot of Clugni in France, illustrious for learning and piety in the tenth century. The sanctity of his life contributed greatly to enlarge the congregation of Clugni; and he was so esteemed that bishops, and secular princes, usually chose him for the arbiter of their disputes. He died about the year 942, and his works are printed in the Bibliothéque of Clugni.

ODO CANTIANUS, so called as being a native of Kent in England, was a Benedictine monk in the twelfth century, in which order his learning and eloquence raised him to the dignity of prior and abbot. He was the intimate friend of archbishop Becket. He composed Commentaries on the Pentateuch and the 2nd Book of Kings; Moral Reflections on the Psalms; treatises entitled De Onere Philistim; De Moribus Ecclesiasticis; De vitis et virtutibus Animæ, &c.

ODOACER, king of the Heruli, according to Ennodius, was only a private man in the guards of the emperor Augustulus, when (A.D. 476,

under the consulship of Basilicus and Armatus) the barbarians chose him for their leader. The barbarians thought, as they often defended Italy, they had a right at least to part of it; but, upon demanding it, they were refused, and the consequence was a revolt. Odoacer is said to have been a man alike capable of commanding an army or governing a state. Having left his own country when he was very young, to serve in Italy, as he was remarkably tall, he was admitted among the emperor's guards, and continued in that station till the above year; when, putting himself at the head of the barbarians in the Roman pay, who, though of different nations, had unanimously chosen him for their leader, he marched against Orestes and his son Augustulus, who still refused to share any of the lands in Italy. The Romans, being inferior both in numbers and valor, were easily conquered: Orestes was ordered to be slain; but Augustulus was spared; and, though stripped of his dignity, was treated with humanity, and allowed a liberal sum for his support and that of his relations. Odoacer was proclaimed king of Italy, but assumed neither the purple nor any other mark of imperial dignity. He was afterwards defeated and slain by Theodoric the Ostrogoth.

ODONTALGIC, in medicine, from Gr. *οδονταλγία*, the tooth ache (*οδον*, a tooth, and *αλγος*, pain) is a term applied to all remedies for the tooth-ache. When the affection is rheumatic, blistering behind the ear, or applying flannel dipped in spirits and covered with ginger or pepper, will generally cure; but, when it proceeds entirely from the injury of a carious tooth, the pain is much more obstinate. In this case it has been recommended to touch the pained carious part of the tooth with a hot iron, or with oil of vitriol, in order to destroy the aching nerve; to hold spirits in the mouth; to put a drop of oil of cloves into the hollow of the tooth, or a pill made of camphor, opium, and oleum caryophylli. Others recommend gum mastich, dissolved in oleum terebinthinæ; others camphor alone, kept in the mouth. The great Boerhaave is said to have applied camphor, opium, oleum caryophylli, and alkohol, upon cotton. The caustic oil which may be collected from writing paper, rolled up tight, and set fire to at the end, will sometimes destroy the exposed nervous substance of a hollow tooth. The application of radix pyrethri, by its power of stimulating the salivary glands, either in substance or in tincture, has also been attended with good effects. But one of the most useful applications of this kind is strong nitrous acid, diluted with three or four times its weight of spirit of wine, and introduced into the hollow of the tooth, either by means of a hair pencil or a little cotton. When the constitution has had some share in the disease, the Peruvian bark has been recommended, and perhaps with much justice, on account of its tonic and antiseptic powers. When the pain is not fixed to one tooth, leeches applied to the gum are of great service. But very often all the foregoing remedies will fail, and the only infallible cure is to draw the tooth.

ODONTOLOGY, in anatomy. See TEETH.

ODOR, *or*ὄσμη, *n. s.*ODORATE, *adj.*

ODORIFEROUS,

ODORIFEROUSNESS, *n. s.*ODOROUS, *adj.*

odorous, yielding scent; usually yielding a sweet or agreeable scent; fragrant: odoriferousness, sweetness of scent; fragrance.

Such fragrant flowers do give most *odorous* smell, But her sweet *odour* did them all excel. *Spenser.*

Me seemed I smelt a garden of sweet flowers, That dainty *odours* from them threw around, For damais sit to deck their lovers' bowers. *Id.*

Smelling is with a communication of the breath, or vapour of the object *odorate*.

Bacon's Natural History.

True virtues, like precious *odours*, are sweeter when incensed and crushed. *Bacon.*

Democritus, when he lay a dying, sent for loaves of new bread, which, having opened and poured a little wine into them, he kept himself alive with the *odour* till a certain fast was past. *Id.*

A bottle of vinegar so buried, came forth more lively and *odoriferous*, smelling almost like a violet. *Id.*

There stood in this room presses that enclosed Robes *odoriferous*. *Chapman.*

Gentle gales,

Fanning their *odoriferous* wings, dispense Native perfumes, and whisper whence they stole These balmy spoils. *Milton's Paradise Lost.*

By her intercession with the king she would lay a most seasonable and popular obligation upon the whole nation, and leave a pleasant *odour* of her grace and favor to the people behind her. *Clarendon.*

They refer savor unto salt, and *odour* unto sulphur; they vary much concerning colour. *Browne.*

Their private roofs on *odorous* timber borne, Such as might palaces for kings adorn. *Waller.*

Smelling bodies send forth effluvia of steams, without sensibly wasting. A grain of musk will send forth *odoriferous* particles for scores of years, without its being spent. *Locke.*

The Levites burned the holy incense in such quantities as refreshed the whole multitude with its *odours*, and filled all the region about them with perfume. *Addison.*

We smell, because parts of the *odorous* body touch the nerves of our nostrils.

Chryse's Philosophical Principles.

Where silver riv'lets play through flowery meads, And woodbines give their sweets, and limes their shades,

Black kennels absent *odours* she regrets, And stops her nose at beds of violets. *Young.*

With vials full of *odours* sweet,

And harps of sweetest sound. *Watts.*

OECOLAMPADIUS (John), a celebrated German reformer, born at Reinspur in Franconia, in 1482. He studied at Heilbrun, and afterwards at Heidelberg, where he took his degree of bachelor in philosophy in his fourteenth year. His reputation induced the elector-palatine to appoint him preceptor to his son. He completed his studies at Tubingen, under Reuchlin; after which he was invited to Basil, and made D.D. At Augsburg he embraced the sentiments of Luther, and published his Confession, which containing doctrines disagreeable to the monks of his convent, he quitted it, and returned to Basil in 1522, where the council appointed him professor of divinity and city preacher. He

Fr. *odour*; Lat. *odor*. Scent; smell; fragrance; perfume. *odorate* is having a strong smell, good or bad: *odoriferous* and

translated St. Chrysostom's Commentaries upon Genesis into Latin. In the dispute between Luther and Zuinglius, respecting the eucharist, he defended the opinions of the latter, in a work which is reckoned well written. In 1528 he married, and completed the reformation of the churches of Basil and Ulm. In 1529 he assisted at the conference at Marspurg; and, returning to Basil, died of the plague in 1531, aged forty-nine. A monument is erected in the cathedral to his memory. He left a son and two daughters. His works are numerous and highly esteemed.

ECONOMICS, *n. s.*

Greek οἰκονομικός.

Household management. See **ECONOMY**.

A prince's leaving his business wholly to his ministers is as dangerous an error in politics as a master's committing all to his servant is in *oeconomicks*. *L'Estrange.*

OECONOMISTS, a sect of philosophers in France, the founder of which was Dr. Duquesnai, who had so well insinuated himself into the favor of Louis XV. that he used to call him his thinker. They were styled Oeconomists because the economy and order to be introduced into the finances, and other plans of alleviating the distresses of the people, were their constant topics. Under pretence of ameliorating the condition of the people, and instructing them, they drew several of the king's best friends in, to patronise their society and their ostensible measures; but in the mean time held private and secret meetings with all whom they could trust, at baron Holbach's; where they prepared and revised tracts for publication; in some of which they disguised their sentiments, but in others were so bold as to publish under such titles as Christianity Unmasked! &c. Their principal members were Messrs. D'Alembert, Turgot, Condorcet, Diderot, La Harpe, and La Moignon, keeper of the seals.

ECUMENICAL, *adj.* Gr. οἰκουμένης. General; universal: applied in particular to certain ecclesiastical councils.

This Nicene council was not received as an *oecumenical* council in any of the eastern patriarchates, excepting only that of Constantinople.

Stillingfleet.

We must not make a computation of the Catholic church from that part of it which was within the compass of the Roman empire, though called *ecumenical*. *Lesley.*

OECUMENIUS, a Greek author who flourished in the middle of the tenth century, and wrote a paraphrase of some of the books of the New Testament in Greek. His works were printed, along with those of Aretas, in 1631, in 2 vols. folio.

CEDEMA, *n. s.*

From Gr. οἰδημα, οἰδω, **CEDEMAT'IC**, *adj.* } to swell. A particular kind

CEDEMATOUS. } of swelling. See the instances.

It is primarily generated out of the effusion of melancholick blood, or secondarily out of the dregs and remainder of a phlegmonous or *oedematich* tumour. *Harvey.*

The great discharge of matter, and the extremity of pain, wasted her, *oedematous* swellings arose in her legs, and she languished and died. *Wiseman.*

An **CEDEMA**, or phlegmatic tumor, in medicine and surgery, is a tumor attended with paleness and cold, yielding little resistance, retaining

the print of the finger when pressed with it, and accompanied with little or no pain. It has no certain situation in any particular part of the body, since the head, eye-lids, hands, and sometimes part, sometimes the whole, body is afflicted with it. When this last is the case, the patient is said to be troubled with a cachexy, leucophlegmatia, or dropsy. See *MEDICINE*.

OEDENBURG, or Soprony-Varmegye, a palatinate of Hungary, adjacent to Austria, the lake of Neusiedl, and the river Raab. Its area is 1300 square miles. Towards the east it is flat, but the rest is intersected by ranges of mountains, so that it affords a great variety of soil. Its climate is, however, mild; and it produces much rye, wheat, and fruits. Near the capital, and in the vicinity of Rust, is produced a red wine, in great request. The mineral products are coal and lime, which are both exported. Population 165,000, composed of a mixed race, of German and Magyar descent, with Croats, and some Jews.

OEDENBURG, or Soprony (the Roman Sopronium), the capital of the palatinate of this name, stands in a pleasant district, between Hungary and Austria Proper, and is neatly built. It has one Lutheran and two Catholic churches, a cathedral chapter, a Catholic and Lutheran gymnasium, and is almost the only place in Hungary that has a manufacture of fine woollen. It possesses also a sugar refinery, and manufactures of glass and potash. But Oedenburgh derives its chief importance from its markets for corn and cattle. The number yearly sold is 40,000 head of cattle, and 80,000 hogs. Of the latter a large proportion are driven from the frontiers of Turkey. Inhabitants 12,500, partly of Hungarian, partly of German descent. Thirty-seven miles S. E. of Vienna.

OEDER (George Louis), an eminent German physician and botanist, born at Anspach in 1728, studied at Gottingen under Haller. Having practised as a physician, at Sleswick, he was in 1752 invited to the botanical chair at Copenhagen. The first part of his *Flora Danica* appeared in 1763. He also published, in 1769, a *Memoir on the Civil and Political State of the Peasantry*. Count Bernstorff consulted him; and under Struensee he was appointed counselor of finance, and president of the council of revenues for Norway. On the fall of that minister he removed from Copenhagen, and was made bailli of the duchy of Oldenburgh, where he established a fund for the benefit of widows. He died the 28th of October, 1791. Besides the works referred to, he published *Elementa Botanica*, 1762—64, 2 vols. 8vo.; *Nomenclator Botanicus*, 1769, 8vo.; *Figures of Plants growing spontaneously in Denmark and Norway*, 1766, folio; *Observations on a Bank for Widows*, Copenhagen, 1771, 8vo.; and many memoirs in periodical journals. Linnæus, in honor of this botanist, gave the name of *Oedera* to a genus of plants of the Cape of Good Hope.

OEDERA, in botany, a genus of the polygamia segregata order, and syngenesia class of plants; *cal.* are multiflorous: the *cor.* tubular, hermaphrodite, and one or two feminine ones ligulate; the receptacle is chaffy; the pappus with numerous chaff.

ÆDIPUS, in fabulous history, a son of *Laius*, king of Thebes, and *Jocasta*. *Laius*, the father of *Ædipus*, was informed by the oracle, as soon as he married *Jocasta*, that he must perish by the hands of his son. This dreadful intelligence awakened his fears, and, to prevent the fulfilling of the oracle, he resolved never to approach *Jocasta*; but his resolutions were violated in a fit of intoxication. The queen became pregnant, and *Laius* ordered his wife to destroy her child as soon as born. The mother did not obey, yet she gave the child to one of her domestics, with orders to expose him in the mountains. The servants bored the feet of the child, and suspended him with a twig, by the heels, to a tree on mount *Cithæron*, where he was soon found by one of the shepherds of *Polybus*, named *Phorbas*, king of Corinth. The shepherd carried him home, and *Peribæa*, the wife of *Polybus*, who had no children, educated him as her own child. The accomplishments of the infant, who was named *Ædipus* on account of the swelling of his feet (*oidein*, to swell, and *ποδες*, the feet), soon became the admiration of the age. His companions envied him, and one of them told him that he was an illegitimate child. On this he went to consult the oracle of Delphi, and was there told not to return home; for if he did he must necessarily be the murderer of his father, and the husband of his mother. This answer terrified him; he knew no home but the house of *Polybus*, and therefore resolved not to return to Corinth. He travelled towards *Phocis*, and, in his journey, met in a narrow road *Laius* on a chariot with his armor-bearer. *Laius* ordered *Ædipus* to make way for him. *Ædipus* refused, and a contest ensued, in which *Laius* and his armor-bearer were both killed. *Ædipus*, ignorant of the rank of the men whom he had killed, continued his journey, and was attracted to Thebes by the fame of the *Sphinx*, whose cruelty had become an object of public concern; and, as the successful explanation of an enigma would end in the death of the *Sphinx*, *Creon*, who at the death of *Laius* had ascended the throne of Thebes, promised his crown and *Jocasta* to him who succeeded in the attempt. The enigma proposed was this:—What animal in the morning walks upon four feet, at noon upon two, and in the evening upon three? This was left for *Ædipus* to explain, and he said to the monster that man, in the morning of life, walks upon his hands and his feet; when he has attained the years of manhood, he walks upon his two legs; and in the evening he supports his old age with the assistance of a staff. The monster, mortified at the true explanation, dashed his head against a rock and perished. *Ædipus* then married *Jocasta*, by whom he had two children, *Eteocles* and *Polynices*. An enquiry at length into the death of *Laius* disclosed to him the parricide and incest of which he had been unintentionally guilty. Struck with horror at the unintentional criminality in which he had been involved, he tore out his eyes, as unworthy to behold the light, and taking sanctuary in the grove of the furies in Attica, there ended his miserable life. *Jocasta* also put an end to her life, and, to complete the tragedy, their sons were distinguished by the inveteracy of their

mutual hatred. The death of *Edipus* is placed by chronologists about the year 1228 B. C.

OELAND, is a long narrow island of the Baltic, separated from the coast of East Gothland by the Strait of Calmar, from two to three leagues broad. The east coast of the island is bold and clean, but the west is lined with dangers. An elevated ridge, called *Alwar*, runs through its whole length, which is twenty-five leagues, and its breadth only one and a half to two. The base of the island is a calcareous reddish stone with green and gray veins, besides which it possesses aluminous schistus, free-stone, blocks of granite, porphyry, rock crystal, and a great quantity of petrified shells, and coralligenous substances. All the elevated ground is stony and barren, producing only a scanty pasture for sheep. The rivulets which descend from these elevations fertilise their declivities as well as the border of level ground towards the sea, where are produced the oak, beech, hazle, and walnut, besides pasture for a considerable number of horses, horned cattle, and sheep. The horses are very small but active and hardy. The island has some wild deer and boars. The population, in 1800, was 22,605 souls, whose chief industry, besides raising cattle, is cutting building-stone, burning lime, and drawing the aluminous schistus from the mines, all of which are sent to the continent. There is no town on the island, but *Borgholm* is an ancient and royal castle on the west, surrounded with round towers at the angles, and high walls, without which is a village.

The southern channel into the strait of Calmar is between the island of Oeland and a group of rocks called the *Utlippers* or *Out-lookers*; between these latter and the main there is no ship channel, the space being filled with rocks. Nearly in the middle of the strait, towards its northern extremity, is an insular rock almost perpendicular, 230 feet high, and surrounded by reefs. In its crevices grow some oaks, beeches, and birch, and its only inhabitants are wild goats and sea-birds. Its proper name in Swedish is *Blokulla*, or the Blue Mountain, but, as it is celebrated in the popular tales of the country as the resort of sorcerers, the superstitious seamen, believing this a name of ill omen, call it the *Virgin's Mountain*.

OELL'AD, n. s. Fr. *ocillade*, *oeil*. A glance; wink.

She gave *ocillads* and most speaking looks
To noble Edmund. *Shakespeare. King Lear.*

OELS, a principality of Silesia, now part of the government of Breslau, belonging to the duke of Brunswick. It has an area of 740 square miles, with 85,000 inhabitants, and is said to yield an income of £15,000 a year.

OELS, a town of Prussian Silesia, the capital of the above principality, is situated on a small river of the same name, sixteen miles E. N. E. of Breslau. It is surrounded with walls, has a palace where the prince formerly resided, one Catholic and five Protestant churches, a free-school, public library, and museum of natural history. Population 3800.

OENANTHE, water dropwort, a genus of the digynia order and pentandria class of plants;

natural order forty-fifth, umbellatæ. The florets are difform; those of the disc sessile and barren; the fruit crowned with the calyx. There are five species; of which the most remarkable is the

O. crocata, or hemlock drop-wort, growing frequently on the banks of ditches, rivers, and lakes, in many parts of Britain. The root and leaves are strong poison; several persons have perished by eating it, through mistake, for water parsnips or for celery, which last it resembles pretty much in its leaves. Lobel calls this plant *enanthe aquatica cicutæ facie*. It grows in great plenty all over Pembroke-shire, and is called by the inhabitants five-fingered root: it is much used by them in cataplasms, for the felon or worst kind of whitlow. They eat some parts of it, but carefully avoid the roots and stalk. These indeed are most pernicious, and prove instantly fatal, unless a proper remedy is applied. This plant is so extremely like celery, and so apt to be mistaken for it, that it cannot be enough guarded against.

Mr. Howard, a surgeon, at Haverford West, relates the case of eleven French prisoners who had the liberty of walking in and about the town of Pembroke. Three of them, being in the fields a little before noon, dug up a large quantity of this plant, which they took to be wild celery, to eat with their bread and butter for dinner. After washing it they all three ate, or rather tasted of the roots. As they were entering the town, without any previous notice of sickness at the stomach, or disorder in the head, one of them was seized with convulsions. The other two ran home, and sent a surgeon to him. The surgeon endeavoured first to bleed and then to vomit him; but those endeavours were fruitless, and he died presently. Ignorant of the cause of their comrade's death, and of their own danger, they gave of these roots to the other eight prisoners, who ate of them with their dinner. A few minutes afterwards the remaining two who gathered the plants were seized in the same manner as the first, of which one died; the other was bled, and a vomit with great difficulty forced down, on account of his jaws being as it were locked together. This operated, and he recovered, but was some time affected with dizziness in his head, though not sick, or the least disordered in his stomach. The other eight, being bled and vomited immediately, were soon well. Stanpaart Vander Wiel mentions two cases of five fatal effects of eating the poisonous root, both of which were attended with great heat in the throat and stomach, sickness, vertigo, and purging; they both died in the course of two or three hours after eating the root. The Dutch physicians make mention of similar mischief from the use of the same root; and Sir W. Watson cites an instance of a person who was poisoned by eating the leaves of the plant boiled in pottage. Most brute animals are equally affected by this poison with man.

OENEUS, in fabulous history, a king of Caledonia in Ætolia, son of Parthaon, grandson of Neptune, and father of MELEAGER, TYDEUS DEJANIRA, &c. See these articles. He was driven from his throne by the sons of his brother

Agrius, but restored by his grandson **Diomedes**, and died at **Oene**.

OENOMAUUS, in fabulous history, the son of **Mars**, by **Stérope**, the daughter of **Atlas** and father of **Hippodamia**, the wife of **Pelops**. See **PELOPS**.

OENONE, a nymph of **Mount Ida**, daughter of the river **Cebrenus**, and wife of **Paris**, before he was known to be the son of king **Priam**. Being endued with the spirit of prophecy, she foretold to him that his voyage to **Greece** would be attended with the ruin of his family and country; and that he would return to her for aid at the hour of his death; all which happened, and **Oenone** killed herself on his body. See **PARIS**.

OENOPTÆ, in Grecian antiquity, a kind of censors at **Athens**, who regulated entertainments.

OENOS, from *Οἶνος*, vinum, wine, in ornithology, a name given to the stock-dove, or wood-pigeon, called also by some vinago, from its wine color; somewhat larger than the common pigeon, but of the same shape and general color. Its neck is of a fine changeable hue, as differently opposed to the light; and its breast, shoulders, and wings, are of a fine purplish hue, or red wine color. Its legs are red, and feathered a little below the joint. See **COLUMBA**.

OENOTHERA, tree primrose, a genus of the monogynia order, and octandria class of plants; natural order seventeenth calycanthemæ: CAL. is quadrid; the petals four: the CAPS. cylindric beneath; the seeds naked. There are seven species; the most remarkable are these:—

1. *O. biennis*, the common biennial tree primrose, has a long, thick, deeply striking root; crowned with many large, oval, spear-shaped, plane, spreading leaves; upright, thick, firm, rough, hairy stems, rising three or four feet high; garnished with long, narrow, lanceolate, close-sitting leaves, irregularly; and at all the axillas, from the middle upwards, large bright yellow flowers.

2. *O. fruticosa*, the shrubby, narrow-leaved, perennial tree-primrose, has long thick roots; upright under-shrubby like red stems, two or three feet high: spear-shaped, lightly indented leaves; and at the axillas pedunculated clusters of yellow flowers, succeeded by pedicellated, acute-angled capsules.

3. *O. octovalvis*, the eight-valved, smooth, biennial tree primrose, has upright, firm, somewhat hairy stems, rising a yard high; oblong, spear-shaped, pointed, plane, smooth leaves; and at the axillas large bright yellow flowers.

4. *O. pumila*, the low perennial tree primrose, has fibrous roots, crowned with many oval, spear-shaped, close-sitting leaves; slender herbaceous stems from ten to twelve inches long; garnished with spear-shaped, blunt, smooth leaves, having very short foot-stalks; and at the axillas smallish bright yellow flowers, succeeded by acute angled capsules. All these plants flower very profusely in June and July, coming out almost half the length of the stalks from the axillas; and, as the stalk advances in stature, new flowers are produced, succeeding those below; in which order the plants continue flowering from about Midsummer till October: each flower is moderately large and conspicuous, con-

sisting of four plane petals, which with the calyx form a very long tube below, and spreading above, generally expand most towards the evening; and are succeeded by plenty of seed in autumn. These plants, though exotics from **America**, are all very hardy, prosper in any common soil and situation, and have been long in the **English** gardens, especially the three first sorts; but the *œnothera biennis* is the most commonly known. They are proper to be employed as plants of ornament for embellishing the pleasure garden; they may be placed any where, and will effect a very agreeable variety three or four months with their plentiful blow of flowers. The biennial kinds must be raised annually from seed, for they totally perish after they have flowered. But the perennials, once raised, continue for years by the root.

OENOTRI, the people of **Oenotria**. These **Oenotrians** were called aborigines; and, after they had been engaged for many years in a war with the **Siculi**, entered into an alliance with a colony of the **Pelasgi**, who came from **Thessaly** into **Italy**, after having been driven from the former country.

OENOTRIA, an ancient name of **Italy**; so called from the **Oenotri** (**Virgil**); who inhabited between **Pæstum** and **Tarentum** (**Ovid**), originally **Arcadians** (**Dionysius Halicarnassæus**), who came under the conduct of **Oenotrus**, son of **Lycæon**, seventeen generations before the war of **Troy**, or 459 years, at twenty-seven years each generation, and gave name to the people. **Cato** derives the name from **Oenotrus**, king of the **Sabines** and **Etruscans**; but **Varro** from a king of the **Latins** of the same name, and **Servius** from the **Greek** name for wine, for which **Italy** was famous; of which opinion also is **Strabo**.

O'ER. Contracted from over. See **OVER**.

OESËL, an island of the **Baltic**, belonging to **Russia**, at the mouth of the gulf of **Riga**. Its length is about seventy miles; its breadth various, being at one place above fifty, and at another not above two or three miles: its area is 1144 square miles. It contains the small town of **Arensberg**, the chief place of a circle in the government of **Riga**. **Oesel** is in general level, but the soil is poor: when manured, however, it produces wheat, rye, barley, and in good seasons oats and peas. The forests are also extensive, and the stone quarries fine. Many blocks have been extracted from them for statuary. The fisheries on the coast are also productive. Population, including the small adjoining islands of **Moen** and **Runoe**, 35,000.

OESOPH'AGUS, *n. s.* Of *Gr.* *οἶσος*, wicker, and *φαγω*, to eat. (From the basket-like texture of the part). The gullet.

Both run by one another, till at the ninth the *œsophagus* turns again to the left, pierces the midriff, and is continued to the left orifice of the stomach.

Quincy.

Wounds penetrating the *œsophagus*, and *aspera arteria*, require to be stitched close, especially those of the *œsophagus*, where the sustenance and saliva so continually presseth into it. *Wiseman's Surgery.*

OESOPHAGUS. See **ANATOMY**.

OESTRUS, in entomology, a genus of insects belonging to the order of **diptera**. It has no

mouth; but three punctures, without trunk or beak: antennæ taper, proceeding from a lenticular joint. This is one of the most curious genera of insects. They are distinguished into several species, named from the different places wherein they deposit their eggs. Some, knowing that their eggs cannot be hatched but under the skins of living creatures, such as bulls, cows, reindeer, stags, and camels, fix upon them at the instant of laying their eggs. From the hinder part of their body issues a whimble of wonderful structure. It is a scaly cylinder, composed of four tubes, which draw out like the pieces of a spying-glass; the last is armed with three hooks, and is the gimblet with which the œstri bore through the tough hide of horned cattle. The animal seems to experience no pain from the puncture, unless the insect, plunging too deep, attacks some nervous fibre; in which case the beast runs about, and becomes furious. The eggs being hatched, the grub feeds on the matter of the wound. The place of its abode forms upon the body of the quadrupeds a bunch sometimes above an inch high. When full grown, the larva breaks through the tumor, and slides down to the ground, in the cool of the morning, that it may neither be overpowered by the heat of the day, nor chilled by the cold of the night: it then digs itself a burrow, into which it retires. Its skin grows hard, and turns to a very solid shell. There it is transformed to a chrysalis, and afterwards to a winged insect. The shell wherein the œstrus is enclosed is of so strong a texture, that it could not make its way out, if at one of the ends there were not a small valve, fastened only by a very slight filament. The first push the œstrus makes, the door gives way, the prison opens, and the insect wings its way to woods and places frequented by cattle. See ENTOMOLOGY.

OETA, in ancient geography, a mountain of Thessaly, extending from Thermopylæ west to the Sinus Ambracius, and crossing at right angles the mountainous country stretching out between Parnassus on the south and Pindus on the north. At Thermopylæ it is very rough and high, rising and ending in sharp and steep rocks, affording a narrow passage between it and the sea from Thessaly to Locris (Strabo), with two paths over it; the one above Trachis, very steep and high; the other through the country of the *Enianes*, much easier and readier for travellers: by this it was that Leonidas was attacked in rear by the Persians. (Pausanias.) Here Hercules laid himself on the funeral pile (Silius Italicus, Ovid); the spot thence called Pyra, according to Livy, who says, that the extreme mountains to the east are called Oeta; and hence the poets allege that day, night, sun, and stars arose from Oeta (Seneca, Silius Italicus, Catullus, Virgil's Culex): circumstances which show the height of this mountain. It is now called Banina.

OF, *prep.* Sax. *of.* Isl. *of.* Concerning; relating or belonging to; from; among; by or produced by; according to: denoting power; causality; ability; choice; qualities or properties; composition; extraction; adherence; motive; form or manner; proportion: 'of late' seems to mean 'in late time;' 'of old,' 'in old time.'

It was called *Corcyra of Corcyra* the daughter of *Æopua*. *Sandys's Travels.*

I was friendly entertained of the English consul. *Sandys.*

The captain of the Helots, with a blow whose violence grew of fury, not of strength, or of strength proceeding of fury, struck Palladius upon the side of the head. *Sidney.*

As if our Lord, even of purpose to prevent this fancy of extemporal and voluntary prayers, had not left, of his own framing, one which might remain as a part of the church liturgy, and serve as a pattern whereby to frame all other prayers with efficacy, yet without superfluity of words. *Hooker.*

I cannot instantly raise up the gross

Of full three thousand ducats. *Shakspeare.*

He borrowed a box of the ear of the Englishman, and swore he would pay him again when he was able. *Id.*

Your Highness shall repose you at the Tower.

—I do not like the Tower of any place. *Id.*

Tubal, a wealthy Hebrew of my tribe, Will furnish me. *Id. Merchant of Venice.*

The chariot was all of cedar, gilt and adorned with crystal, save that the fore-end had pannels of sapphires set in borders of gold, and the hinder end the like of emeralds of the Peru colour. *Bacon.*

Like heaven in all, like earth in this alone, That tho' great states by her support do stand, Yet she herself supported is of none, But by the finger of the Almighty's hand. *Davies.*

The senate

And people of Rome, of their accustomed greatness, Will sharply and severely vindicate Not only any fact, but any practice 'Gainst the state. *Ben Jonson's Catiline.*

The quarrel is not now of fame and tribute, Or of wrongs done unto confederates, But for your own republic. *Ben Jonson.*

The most renowned of all are those to whom the name is given Philippinæ. *Abbot.*

He was a man of a decayed fortune, and of no good education. *Clarendon.*

O miserable of happy! is this the end Of this new glorious world, and me so late The glory of that glory, who now become Accursed, of blessed! *Milton's Paradise Lost.*

The Venice glasses would crack of themselves. *Boyle.*

Of late, divers learned men have adopted the three hypostatical principles. *Id. on Colours.*

They do of right belong to you, being most of them first preached amongst you. *Tillotson.*

All men naturally fly to God in extremity, and the most atheistical person in the world, when forsaken of all hopes of any other relief, is forced to acknowledge him. *Id.*

Of himself is none, But that eternal infinite and one, Who never did begin, who ne'er can end; On him all beings, as their source, depend. *Dryden.*

He, to his natural endowments of a large invention, a ripe judgment, and a strong memory, has joined the knowledge of the liberal arts. *Id.*

Our sovereign Lord has pondered in his mind The means to spare the blood of gentle kind; And, of his grace and inborn clemency, He modifies his first severe decree. *Id.*

Tancred, whose delight

Was placed in his fair daughter's daily sight, Of custom, when his state affairs were done, Would pass his pleasing hours with her alone. *Id.*

In days of old there lived, of mighty fame,
A valiant prince, and Theseus was his name. *Id.*

Mother, says the thrush, never had any such a
friend as I have of this swallow. No, says she, nor
ever mother such a fool as I have of this same thrush.

L'Estrange.

The rousing of the mind with some degrees of
vigour, does set it free from those idle companions.

Locke.

How many are there of an hundred, even amongst
scholars themselves? *Id.*

This cannot be understood of the first disposition
of the waters, as they were before the flood.

Burnet.

Peace, of all worldly blessings, is the most valuable.

Smallridge.

No particle of matter, nor any combination of
particles; that is, no bodies can either move of
themselves, or of themselves alter the direction of
their motion. *Cheyne.*

We are not to describe our shepherds as shepherds
at this day really are, but as they may be conceived
then to have been, when the best of men followed
the employment. *Pope.*

To cultivate the advantages of success, is an affair
of the cabinet; and the neglect of this success may
be of the most fatal consequence to a nation.

Swift.

Howe'er it was civil in angel or elf,
For he'er could have filled it so well of himself. *Id.*

The common materials which the ancients made
their ships of, were the wild-ash, the ever-green oak,
the beech, and the alder. *Arbuthnot on Coins.*

While heard from dale to dale,

Waking the breeze resounds the blended voice
Of happy labor, love, and social glee. *Thomson.*

This truth at least let Satire's self allow,
No dearth of bards can be complained of now:
The loaded press beneath the labor groans,
And printers' devils shake their weary bones.

Byron.

It is with men of their wit as with women of
their beauty. Tell a woman she is fair, and she will
not be offended that you tell her she is cruel.

Canning.

OFF, *adv., prep., & interj.* } Sax. *of*; Goth.,
OFF'ING, *n. s.* } Mæz. Goth., Teut.,
Belg., Dan., and Isl. *af*; Lat. *ab*. From; out
of; opposed to *on*; and denoting generally dis-
junction; separation; breach of continuity,
agreement, or promise; absence; distance; dis-
appointment; opposition. 'Off-hand,' means
unstudied; quickly performed: 'to come off,'
to escape or recede from a contract by accident
or subterfuge: 'to get off' is to escape: 'to go
off' desert or abandon; take fire and be dis-
charged: 'off' also signifies a state of being,
separately considered, as 'he is well or ill off'
means he is in a good or bad state or condition:
as an interjection, off commands away, or to de-
part; and expresses disgust or abhorrence.

Philoclea, whose delight of hearing and seeing
was before a stay from interrupting her, gave herself
to be seen unto her with such a lightening of beauty
upon Zelmane, that neither she could look on, nor
would look off. *Sidney.*

Since the wisdom of their choice is rather to have
my cap than my heart, I will practise the insinuating
nod, and be off to them most counterfeitedly.

Shakespeare. Coriolanus.

Where are you, Sir John? come, off with your
boots. *Shakespeare.*

West of this forest, scarcely off a mile,
In goodly form comes on the enemy. *Id.*
About thirty paces off were placed harquebusiers.
Knolles.

I continued feeling again the same pain; and
finding it grow violent I burnt it, and felt no more
after the third time; was never off my legs, nor kept
my chamber a day. *Temple.*

See

The lurking gold upon the fatal tree; .
Then rend it off. *Dryden.*

Several starts of fancy off hand look well enough.
L'Estrange.

Competitions intermit, and go off and on as it
happens, upon this or that occasion. *Id.*

A piece of silver coined for a shilling, that has
half the silver clipped off, is no more a shilling than
a piece of wood which was once a sealed yard is still
a yard, when one half of it is broke off. *Locke.*

The questions no way touch upon puritanism,
either off or on. *Sanderson.*

Cicero's Tusculum was at a place called Grotto
Ferrate, about two miles off this town, though most
of the modern writers have fixed it to Freccati.

Addison on Italy.

Truth, guide some genuine bard, and aid his hand
To drive this pestilence from off the land. *Byron.*

OFFA, or UFFA, an Anglo-Saxon monarch,
king of Mercia, who succeeded Ethelbald, A.D.
755. He treacherously murdered Ethelbert,
king of the East Angles, and took possession of
his kingdom. As an atonement he gave the tenth
of his goods to the poor, went on a pilgrimage
to Rome, instituted the tax called Peter pence,
and built the monastery at St. Albans. He also
erected the wall which bears his name. See
ENGLAND. He died in 794.

OFFAL, *n. s.* Belgic *afal*. Off and fall,
i. e. that which falls off, or is refuse; waste, par-
ticularly waste or refuse food; coarse flesh; car-
rion; any refuse.

What trash is Rome! what rubbish and what
offal! *Shakespeare.*

I should have fatted all the region kites
With this slave's offal. *Id. Hamlet.*

If we come into a barn floor and see some few
grains scattered amongst a heap of chaff, we do not
call it a corn heap, the quantity of the offal devours
the mention of those insensible grains. *Hall.*

Cramm'd, and gorg'd, nigh burst

With suck'd and glutted offal.

Milton's Paradise Lost.

If a man bemoan his lot,
That after death his mould'ring limbs shall rot,
A secret sting remains within his mind;
The fool is to his own cast offals kind. *Dryden.*

To have right to deal in things sacred was ac-
counted an argument of a noble and illustrious de-
scendant; God would not accept the offals of other
professions. *South.*

He let out the offals of his meat to interest, and
kept a register of such debtors in his pocket-book.

Arbuthnot.

They commonly fat hogs with offal corn.

Mortimer.

OFFENBACH, a mean town of Germany, in
the grand duchy of Hesse-Darmstadt, the chief
place of the principality of Isenburg-Birstein.
It is partly walled and divided into the Old,
the New, and the French district. It has three Pro-
testant churches, a synagogue, a ducal palace,
and 8000 inhabitants. This is the only manu-

facturing town in the duchy, and is noted for its sauff and tobacco, wax, japanned goods, musical instruments, carriages, and trinkets. The printing of books is also carried on extensively; and the wine produced in the vicinity forms a good article of traffic. It stands on the Maine, four miles E. S. E. of Frankfort.

OFFENCE', *n. s.*

OFFENCE'FUL, *adj.*

OFFENCE'LESS, *adj.*

OFFEND', *v. a. & v. n.*

OFFEN'DER, *n. s.*

OFFEN'DRESS, *n. s.*

OFFEN'SIVE, *adj.*

OFFEN'SIVELY, *adv.*

OFFEN'SIVENESS, *n. s.*

Fr. offence; Latin

offendo. Crime; vice;

transgression; injury;

attack; act of wicked-

ness, or causing injury

or disgust; the disgust

caused; displeasure or

anger: offenceful is,

disgustful; displeas-

ing; injurious: offenceless, harmless; unoffending: to offend, to transgress; violate rules; make angry; disgust; displease; attack; injure: as a neuter verb, be criminal; cause anger; commit transgression or sin (taking *against* after it): an offender is a criminal, he who has committed a crime or an injury; offendress, an unusual feminine noun of the same signification: offensive is causing anger or displeasure; pain or injury; assailable; not defensive: offensively and offensiveness follow these senses.

All that watch for iniquity are cut off, that make a man an offender for a word. *Isa. xxix. 21.*

Giving no offence in any thing, that the ministry be not blamed. *2 Cor. vi. 3.*

Whosoever shall keep the whole law, and yet offend in one point, he is guilty of all. *James ii.*

I am young and unkonning as thou wast, and, as I trow, with love offended most of any living creature. *Chaucer.*

He was fain to defend himself, and withal so to offend him, that by an unlucky blow the poor Philoxenus fell dead at his feet. *Sidney.*

Earnest in every present humour, and making himself brave in his liking, he was content to give them just cause of offence when they had power to make just revenge. *Id.*

Courtesy, that seemed incorporated in his heart, would not be persuaded to offer any offence, but only to stand upon the best defensive guard. *Id.*

It shall suffice to touch such customs of the Irish as seem offensive and repugnant to good government. *Spenser.*

Since no man can do ill with a good conscience, the consolation which we herein seem to find is but a meer deceitful pleasing of ourselves in error, which must needs turn to our greater grief, if that which we do to please God most, be for the manifold effects thereof offensive unto him. *Hooker.*

In the least thing done offensively against the good of men, whose benefit we ought to seek for as our own, we plainly shew that we do not acknowledge God to be such as indeed he is. *Id.*

The emperor himself came running to the place in his armour, severely reproving them of cowardice who had forsaken the place, and grievously offended with them who had kept such negligent watch. *Knolles' History of the Turks.*

Thou hast stolen that which after some few hours Were thine without offence. *Shakespeare. Henry IV.*

It seems your most offenceful act

Was mutually committed. *Shakespeare.*

You are but now cast in his mood, a punishment more in policy than in malice; even so as one would beat his offenceless dog to affright an imperious lion. *Id. Othello.*

If much you note him

You shall offend him, and extend his passion.

Feed and regard him not. *Id. Macbeth.*

All vengeance comes too short

Which can pursue the offender. *Shakespeare.*

Virginity murders itself, and should be buried in highways out of all sanctified limit, as a desperate offendress against nature. *Id.*

The pleasures of the touch are greater than those of the other senses; as in warming upon cold, or refrigeration upon heat: for, as the pains of the touch are greater than the offences of other senses, so likewise are the pleasures. *Bacon.*

It is an excellent opener for the liver, but offensive to the stomach. *Id. Natural History.*

Thither with speed their hasty course they plyed, Where Christ the Lord for our offences died. *Fairfax.*

So like a fly the poor offender dies;

But, like the wasp, the rich escapes and flies.

We enquire concerning the advantages and disadvantages betwixt those military offensive engines used among the ancients, and those of these latter ages. *Wilkins.*

A lady had her sight disordered, so that the images in her hangings did appear to her, if the room were not extraordinarily darkened, embellished with several offensively vivid colours. *Boyle.*

Cheaply you sin, and punish crimes with ease, Not as the' offended, but the offenders please. *Dryden.*

I have given my opinion against the authority of two great men, but I hope without offence to their memories; for I loved them living, and reverence them dead. *Id.*

If, by the law of nature, every man hath not a power to punish offences against it, I see not how the magistrates of any community can punish an alien of another country. *Locke.*

The muscles of the body being preserved sound and limber upon the bones, all the motions of the parts might be explicated with the greatest ease and without any offensiveness. *Grew's Museum.*

The bishops therefore of the church of England did no ways offend by receiving from the Roman church into our divine service, such materials, circumstances, or ceremonies, as were religious and good. *Whita.*

By great and scandalous offences, by incorrigible misdemeanours, we may incur the censure of the church. *Pearson.*

Gross sins are plainly seen, and easily avoided, by persons that profess religion. But the indiscreet and dangerous use of innocent and lawful things, as it does not shock and offend our consciences, so it is difficult to make people at all sensible of the danger of it. *Law.*

The conscience of the offender shall be sharper than an avenger's sword. *Clarissa.*

Some particular acrimony in the stomach sometimes makes it offensive, and which custom at last will overcome. *Arbutnot.*

How shall I lose the sin yet keep the sense, And love the' offender, yet detest the offence? *Pope.*

Our language is extremely imperfect, and in many instances it offends against every part of grammar. *Swin.*

The watchful guests still hint the last offence, The daughter's petulance, the son's expence, Improve his heady rage with treacherous skill, And mould his passions till they make his will. *Johnson.*

Conscience is a great ledger book in which all our

offences are written and registered, and which time reveals to the sense and feeling of the *offender*.

Sheridan.

OFFER, *v. a., v. n., & n. s.*
OFFERER, *n. s.*
OFFERING,
OFFERTORY,
OFFERTURE.

Fr. offrir, offre;
Lat. offero. To
present; exhibit
any thing with
a view to its

being taken: hence to give, and to attempt or propose any thing; to sacrifice; immolate; devote; or present, as an act of worship (taking up emphatically): to bid; propose as a price or reward: as a neuter verb, to be present or at hand; to present itself; make an attempt (taking at): an offer is, an advance; a proposal; attempt or endeavour; price bid; tribute or acknowledgment: an offerer, he who in any of the foregoing senses offers: offering, the thing or subject matter offered: offertory, the act of offering: offerture, an old synonyme of offer; overtur.

Which hath not nede ech dai, as preestis firste for hisse owne gyltis to *offre* sacrifices, and afterwarde for the peple, for he dide this thyng in *offryng* himself conys.

Wiclif.

They *offered* unto the Lord, of the spoil which they had brought, seven hundred oxen.

2 Chronicles.

When thou shalt make his soul an *offering* for sin, he shall see his seed.

Isaiah liii. 10.

Lysimachus armed about three thousand men, and began first to *offer* violence.

2 Mac. iv. 40.

But trewly to tellen atte last,
He was in chirche a noble ecclesiast;
Wel coude he rede a lesson or a storie,
But alder best he sang an *offertorie*. *Chaucer.*

In all the parish wif ne was ther non,
That to the *offering* before hir shulde gone;
And, if thei did, certain so wroth was she,
That she was out of alle charitee. *Id.*

No thought can imagine a greater heart to see and contemn danger, where danger would *offer* to make any wrongful threatening upon him. *Sidney.*

Fair streams that do vouchsafe in your clearness to represent unto me my blubbered face, let the tribute *offer* of my tears procure your stay awhile with me, that I may begin yet at last to find something that pities me. *Id.*

If the mind of the *offerer* be good, this is the only thing God respecteth. *Hooker.*

Force compels this *offer*.

And it proceeds from policy, not love
—Mowbray, you overween to take it so;
'This *offer* comes from mercy, not from fear.

Shakspeare.

Plucking the entrails of an *offering* forth,
They could not find a heart within the beast. *Id.*

Many motions, though they be unprofitable to expel that which hurteth, yet they are *offers* of nature, and cause motions by consent; as in groaning, or crying upon pain. *Bacon.*

We came close to the shore, and *offered* to land. *Id.*

He went into St. Paul's church, where he made *offertory* of his standards, and had orisons and Te Deums sung. *Id.*

Thou hast prevented us with *offertures* of thy love, even when we were thine enemies.

King Charles.

One *offers*, and in *offering* makes a stay;
Another forward sets, and doth no more. *Daniel.*
I hope they will take it well that I should *offer* at a new thing, and could forbear presuming to meddle

where any of the learned pens have ever touched before.

Cromart.

The administration of the sacrament he reduced to an imitation, though a distant one, of primitive frequency, to once a month, and therewith its anciently inseparable appendant, the *offertory*. *Fell.*

Nor, shouldst thou *offer* all thy little store,
Will rich Iolas yield, but *offer* more. *Dryden.*

Whole herds of *offered* bulls about the fire,
And bristled boars and woolly sheep expire. *Id.*
I would treat the pope and his cardinals roughly,
if they *offered* to see my wife without my leave. *Id.*

The gloomy god

Stood mute with awe, to see the golden red;
Admired the destined *offering* to his queen,
A venerable gift so rarely seen. *Id.*

Write down and make signs to him to pronounce them, and guide him by shewing him by the motion of your own lips to *offer* at one of those letters; which being the easiest, he will stumble upon one of them. *Holder.*

In that extent wherein the mind wanders in remote speculations, it stirs not one jot beyond those ideas which sense or reflection have *offered* for its contemplation. *Locke.*

Servants, placing happiness in strong drink, make court to my young master, by *offering* him that which they love. *Id.*

It is in the power of every one to make some essay, some *offer* and attempt, so as to shew that the heart is not idle or insensible, but that it is full and big, and knows itself to be so, though it wants strength to bring forth. *South's Sermons.*

When he commanded Abraham to sacrifice Isaac, the place of the *offering* was not left undetermined, and to the *offerer's* discretion. *Id.*

I enjoined all the ladies to tell the company, in case they had been in the siege, and had the same *offer* made them as the good women of that place, what every of them would have brought off with her, and have thought most worth the saving.

Addison's Spectator.

One sees in it a kind of *offer* at modern architecture, but, at the same time that the architect has shown his dislike of the Gothic manner, one may see that they were not arrived at the knowledge of the true way. *Id. on Italy.*

I'll favour her,

That my awakened soul may take her flight,
Renewed in all her strength, and fresh with life,
An *offering* fit for heaven. *Id. Cato.*

When a man is called upon to *offer up* himself to his conscience, and to resign to justice and truth, he should be so far from avoiding the lists, that he should rather enter with inclination, and thank God for the honour. *Collier.*

It contains the grounds of his doctrine, and *offers* at somewhat towards the disproof of mine.

Atterbury.

The Arians, Eunomians, and Macedonians, were then formally and solemnly challenged by the Catholics to refer the matter in dispute to the concurring judgment of the writers that lived before the controversy began; but they declined the *offer*.

Waterland.

Some nymphs there are, too conscious of their face;
These swell their prospects, and exalt their pride,
When *offers* are disdained, and love denied. *Pope.*

When stock is high, they come between,
Making by second hand their *offers*;
'Then cunningly retire unseen,
With each a million in his coffers. *Swift.*

Without *offering* at any other remedy, we hastily engaged in a war, which hath cost us sixty millions. *Id.*

Inferior offerings to thy god of vice,
Are duly paid in saddles, cards, and dice. *Young.*

The lover too shuns business and alarms,
Tender idolater of absent charms.

Saints offer nothing in their warmest prayers,

That he devotes not with a zeal like theirs :

'Tis consecration of his heart, soul, time ;

And every thought that wanders is a crime.

Cowper.

OFFERINGS, JEWISH. The Hebrews had several kinds of offerings, which they presented at the temple. Some were free-will offerings, and others were of obligation. The **FIRST-FRUIITS** (see that article), the tithes, the sin-offerings, were of obligation ; the peace-offerings, vows, offerings of wine, oil, bread, salt, &c., made to the temple or to the ministers of the Lord, were offerings of devotion. The Hebrews called all offerings in general corban. But the offerings of bread, salt, fruits, and liquors, as wine and oil, which were presented to the temple, they called *mincha*. The sacrifices are not properly offerings, and are not commonly included under that name. The offerings of grain, meal, bread, cakes, fruits, wine, salt, and oil, were common in the temple. Sometimes these offerings were alone, and sometimes they accompanied the sacrifices. Honey was never offered with the sacrifices ; but it might be offered alone in the quality of the first fruits. These were the rules that were observed in the presenting of those offerings, called in Hebrew *mincha* or *kerbon mincha* ; in the Septuagint, offerings of sacrifice ; and the same by St. Jerome, *oblationem sacrificii* ; but by our translators meat offerings (Lev. ii. 1, &c.) There were five sorts of these offerings : 1. Fine flour or meal. 2. Cakes of several sorts, baked in an oven. 3. Cakes baked upon a plate. 4. Another sort of cakes, baked upon a *gridiron*, or plate with holes in it. 5. The first fruits of the new corn, which were offered either pure and without mixture, or roasted or parched in the ear or out of the ear. The cakes were kneaded with olive oil, or fried with oil in a pan, or only dipped in oil after they were baked. The bread offered to be presented upon the altar was to be without leaven ; for leaven was never offered upon the altar, nor with the sacrifices : but they might make presents of common bread to the priests and ministers of the temple. The offerings now mentioned were appointed on account of the poorer sort, who could not go to the charge of sacrificing animals. Those that offered only oblations of bread or of meal offered also oil, incense, salt, and wine, which were in a manner the seasoning of it. The priest in waiting received the offerings from the hand of him that offered them ; laid a part of them upon the altar, and reserved the rest for his own subsistence, as his right. Nothing was burnt quite up but the incense, of which the priest kept back nothing for his own share. When an Israelite offered a loaf to the priest, or a cake, the priest broke the loaf or cake into two parts, setting that part aside that he reserved to himself, and broke the other into crumbs ; poured oil upon it, salt, wine, and incense ; and spread the whole upon the fire of the altar. If these offerings were accompanied by an animal for a sacrifice,

it was all thrown upon the victim, to be consumed along with it. If the offerings were the ears of new corn, either wheat or barley, these ears were parched at the fire or in the flame, and rubbed in the hand, and then offered to the priest in a vessel ; over which he put oil, incense, wine, and salt, and then burnt it upon the altar, first having taken as much of it as of right belonged to himself. The greatest part of these offerings were voluntary, and of pure devotion. But when an animal was offered in sacrifice, they were not at liberty to omit these offerings. Every thing was to be supplied that was to accompany the sacrifice, and which served as a seasoning to the victim. There were some cases in which the law required only offerings of corn, or bread : for example, when they offered the first fruits of their harvest, whether they were offered solemnly by the whole nation, or by the devotion of private persons. As to the quantity of meal, oil, wine, or salt, which was to go along with the sacrifices, we do not find that the law determined it. The priest threw a handful of meal or crumbs upon the fire of the altar, with wine, oil, and salt in proportion, and all the incense. All the rest belonged to him ; the quantity depended upon the liberality of the offerer. Moses appoints an *assaron*, or the tenth part of an *ephah* of meal, for those that had not wherewithal to offer the appointed sin-offering. (Lev. v. 11, xiv. 21.) In the solemn offerings of the first fruits of the whole nation, they offered an entire sheaf of corn, a lamb of a year old, two tenths of fine meal mixed with oil, and a quarter of a hin of wine for the libation. (Lev. xxiii. 10, 11, 12, &c.) In the sacrifice of jealousy (Numb. v. 15), when a husband accused his wife of infidelity, the husband offered the tenth part of a *satum* of barley-meal, without oil or incense, because it was a sacrifice of jealousy, to discover whether his wife was guilty or not. The offerings of the fruits of the earth, of bread, of wine, oil, and salt, are the most ancient of any that have come to our knowledge. Cain offered to the Lord of the fruits of the earth, the first fruits of his labor (Gen. iv. 3, 4) ; Abel offered the firstlings of his flocks, and of their fat.

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| OFFICE, <i>n. s. & v. a.</i> | } <i>Fr. office ; Lat. officium.</i> Agency ; charge ; business ; particularly public business or agency ; magistracy ; employment in the service of the state ; devotion ; formulary of devotion ; place of business : to office is used by Shakespeare for to perform ; do : officer is, a public agent or servant ; particularly a military servant of the state ; also one who has the charge of apprehending criminals : officered is, furnished with officers : official is, appropriate or conducive to some assigned office ; also, as a noun substantive, an ecclesiastical officer described in the extract from Ayliffe : officiality is, charge, state or quality : to officiate is, to yield or give in course of office ; to discharge an office : officinal, used in a shop or druggist's office, applied to medicinal plants and drugs. |
| OFFICER, <i>n. s.</i> | |
| OFFICERED, <i>adj.</i> | |
| OFFICIAL, <i>adj. & n. s.</i> | |
| OFFICIALITY, <i>n. s.</i> | |
| OFFICIATE, <i>v. a. & v. n.</i> | |
| OFFICIAL, <i>n. s.</i> | |

Full thredbar was his overest courtessy,
For he hadde gotten him yet no benefice,
He was nought worldly to have an *office*.

Chaucer

You have contrived to take
From Rome all seasoned *offices*, and to wind
Yourself into a power tyrannical. *Shakespeare.*

This gate
Instructs you how t' adore the heavens, and bows you
To morning's holy *office*. *Id. Cymbeline.*

Wolves and bears,
Casting their savageness aside, have done
Like *offices* of pity. *Id. Winter's Tale.*
Methought this staff, mine *office*-badge in court,
Was broke in twain. *Id. Henry VI.*

What shall good old York see there,
But empty lodgings and unfurnished walls,
Unpeopled *offices*, untrodden stones? *Shakespeare.*

The thieves are posset with fear
So strongly, that they dare not meet each other;
Each takes his fellow for an *officer*. *Id.*

The tribunes
Endue you with the people's voice. Remains
That in the *official* marks invested, you
Anon do meet the senate. *Id. Coriolanus.*

I will begone, altho'
The air of Paradise did fan the house,
And angels *officed* all. *Shakespeare.*
Empson and Dudley, though they could not but
hear of these scruples in the king's conscience, yet as
if the king's soul and his money were in several
offices, that the one was not to intermeddle with the
other, went on with as great rage as ever. *Bacon.*

The next morning there came to us the same *officer*
that came to us at first to conduct us to the stranger's
house. *Id.*

A poor man found a priest over-familiar with his
wife, and, because he spake it abroad and could not
prove it, the priest sued him before the bishop's
official for defamation. *Camden.*

No minister *officiating* in the church can with a
good conscience omit any part of that which is com-
manded by the aforesaid law. *Sanderson.*

Whosoever hath children and servants, let him
take care that they say their prayers before they be-
gin their work; the Lord's prayer, the ten command-
ments, and the creed, is a very good *office* for them,
if they are not fitted for more regular *offices*. *Taylor.*

The sun was sunk, and after him the star
Of Hesperus, whose *office* is to bring
Twilight upon the earth. *Milton's Paradise Lost.*

All her numbered stars that seem to roll
Spaces incomprehensible, for such
Their distance argues, and their swift return
Diurnal, merely to *officiate* light
Round this opacous earth, this punctual spot. *Milton.*

In this animal are the guts, the stomach, and
other parts *official* unto nutrition, which, were its
aliment the empty reception of air, their provisions
had been superfluous. *Brown.*

Who of the bishops or priests that *officiate* at the
altar, in the places of their sepulchres, ever said, We
offer to thee Peter or Paul? *Stillingfleet.*

If it should fall into the French hands, all the
princes would return to be the several *officers* of his
court. *Temple.*

Is it the magistrate's *office* to hear causes or suits
at law, and to decide them? *Kettleworth.*

Since he has appointed *officers* to hear it, a suit at
law in itself must needs be innocent. *Id.*

You who your pious *offices* employ,
To save the reliques of abandoned Trov. *Dryden.*

If he did not nimbly ply the spade,
His surly *officer* ne'er failed to crack
His knotty cudgel on his tougher back. *Id.*
The wolf took occasion to do the fox a good *office*.
L'Estrange.

Birds of prey are an emblem of rapacious *officers*.
A superior power takes away by violence from them,
that which by violence they took away from others. *Id.*

What could we expect from an army *officer'd* by
Irish papists and outlaws? *Addison's Freeholder.*

To prove curates no servants is to rescue them
from that contempt which they will certainly fall into
under this notion; which, considering the number
of persons *officiating* this way, must be very prejudi-
cial to religion. *Collier.*

In this experiment the several intervals of the
teeth of the comb do the *offices* of so many prisms,
every interval producing the phenomenon of one
prism. *Newton's Opticks.*

The *office* of an *officialty* to an archdeacon.
Ayliffe.

Official is that person to whom the cognizance of
causes is committed by such as have ecclesiastical
jurisdiction. *Id.*

The bad disposition he made in landing his men,
shews him not only to be much inferior to Pompey
as a sea *officer*, but to have had little or no skill in
that element. *Arbuthnot.*

And make the symbols of atoning grace
An *office*-key; a picklock for a place. *Cowper.*

I hope I shall not depart from the simplicity of
official language in saying, that the majesty of justice
ought to be approached with solicitation. *Warren Hastings.*

Will they thank the noble lord for reminding us
how soon these lofty professions dwindled down to
little jobbing pursuits for followers or dependants, as
unfit to fill the *offices* procured for them, as the *offices*
themselves were unfit to be created? *Sheridan.*

He thinks that my right honourable friend, if in
office, would renounce the principle he has avowed. *Id.*

It is certainly true, that that charter was brought
from Brazil, who has filled, and still continues to
fill, an *office* of high trust from this country. *Canning.*

OFFICE, in the canon law, is used for a bene-
fice that has no jurisdiction annexed to it.

OFFICES, in architecture, denote all the apart-
ments appointed for the necessary occasions of
a palace or great house; as kitchen, pantries,
confectionaries, &c.

An OFFICER, in the army, is any person
entrusted with command. *General officers* are
those whose command is not limited to a single
troop or regiment, but extends to a body of
forces composed of several regiments; such are
the general, lieutenant-general, major-general,
and in some armies brigadier-general. *Staff-*
officers are the quarter-master-general, and the
adjutant-general, brigade officers, and aides-
de-camp; also the quarter-masters, adjutants,
the physicians, surgeons, and chaplains. *Com-*
missioned officers in our service are those ap-
pointed by the king's commission; such are all
from the general to the cornet and ensign, both
inclusive; and in the blues, or royal horse
guards, the quarter-master bears the king's com-
mission. Those persons are also called com-
missioned officers that act under the signature
of the lord-lieutenants of counties, or under that

of the colonel or commandant of a regiment, as in the militia, volunteer, and yeomanry corps. *Warrant officers*, those who have no commissions, but only warrants from such boards, or persons, as are authorised by the king to grant them. *Brevet officer*, one who, in doing duty with other corps, takes rank according to the commission which he holds from the king, and which is superior to the one for which he actually receives pay, or by which he can do duty in his own. A captain, for instance, in the sixty-second regiment of foot, who has the rank of brevet-major in the army, may, when that corps does brigade duty, command every captain on service with him. *Non-commissioned officers* are serjeant-majors, quarter-master serjeants, serjeants, corporals, drum and fife majors; who are nominated by their respective captains, and appointed by the commanding officers of regiments, and by them reduced without a court-martial. *Orderly non-commissioned officers* are those who are orderly, or on duty, for that week; who, on hearing the drum beat for orders, are to repair to the place appointed to receive them, and to take down in writing, in the orderly book, what is dictated by the adjutant, or serjeant-major: they are then immediately to show these orders to the officers of the company, and afterwards warn the men for duty.

OFFICERS, GREAT, OF THE CROWN, are, the lord high-steward, the lord high-chancellor, the lord high-treasurer, the lord high-president of the council, the lord privy seal, the lord chamberlain, the lord high-constable, and the earl-marshal; each of which see under its proper article.

OFFICERS, STAFF, are such as, in the king's presence, bear a white staff or wand; and at other times, on their going abroad, have it carried before them by a footman bare-headed; such are the lord-steward, lord-chamberlain, lord-treasurer, &c. The white staff is taken for a commission; and at the king's death each of these officers breaks his staff over the hearse made for the king's body, and thus lays down his commission, and discharges all his inferior officers.

OFFICIAL is also a deputy appointed by an archdeacon as his assistant, who sits as judge in the archdeacon's court.

OFFICIAL, in the canon law, an ecclesiastical judge, appointed by a bishop, chapter, abbot, &c., with charge of the spiritual jurisdiction of the diocese.

OFFICIOUS, *adj.* } Fr. *officieux*; Latin
OFFICIOUSLY, *adv.* } *officiosus*. Kind; per-
OFFICIOUSNESS, *n. s.* } forming good offices;
opportunately or obtrusively kind: hence im-
pertinent; meddling: the adverb and noun-sub-
stantive follow these senses.

You are too *officious*
In her behalf that scorns your services.

Shakespeare.

At Taunton they killed, in fury, an *officious* and
eager commissioner for the subsidy. Bacon.

Yet, not to earth are those bright luminaries
Officious; but to thee, earth's habitant. Milton.

In whom is required understanding as in a man,
courage and vivacity as in a lion, service and minis-

terial *officiousness* as in the ox, and expedition as in
the eagle. Browne.

The most corrupt are most obsequious grown,
And those they scorned *officiously* they own. Dryden.

Let thy goats *officiously* be nurst,
And led to living streams to quench their thirst. Id.

I shew my *officiousness* by an offering, though I
betray my poverty by the measure. South.

Cato, perhaps
I'm too *officious*; but my forward cares
Would fain preserve a life of so much value. Addison.

OFFING, or *OFFIN*, in the sea language, is that
part of the sea, a good distance from shore,
where there is deep water, and no need of a
pilot to conduct the ship: thus; if a ship from
shore be seen sailing out to seaward, they say,
she stands for the offing; and, if a ship, having
the shore near her, have another a good way
without her, or towards the sea, they say, that
ship is in the offing.

OFFSET, *n. s.* Off and set. Sprout; the
shoot of a plant.

They are multiplied not only by the seed, but
many also by the root, producing *offsets* or creeping
under ground. Ray.

Some plants are raised from any part of the root,
others by *offsets*, and in others the branches set in the
ground will take root. Locke.

OFFSCOURING, *n. s.* Off and scouring.
Recrement; part rubbed off in scouring or
cleansing.

Thou hast made us as the *offscouring* and refuse in
the midst of the people. Lamentations iii. 45.

Being accounted, as St. Paul says, the very filth
of the world, and the *offscouring* of all things. Kettlewell.

OFFSPRING. Off and spring. Propaga-
tion: more generally that which is propagated;
children; descendants; production.

All things coveting to be like unto God in being
ever, that which cannot hereunto attain personally
doth seem to continue itself by *offspring* and propa-
gation. Hooker.

When the fountain of mankind
Did draw corruption, and God's curse, by sin;
This was a charge, that all his heirs did bind,
And all his *offspring* grew corrupt therein. Davies.

Tho' both fell before their hour,
Time on their *offspring* hath no power;
Nor fire nor fate their bays shall blast,
Nor death's dark vale their days o'ercast. Denham.

To the gods alone
Our future *offspring*, and our wives are known. Dryden.

His principal actor is the son of a goddess, not to
mention the *offspring* of other deities. Addison.

OFT, *adv.* } Sax. *oft*; Teut. *oft*, *often*.
OFTEN, } Frequent: this both *oft* and
OFTENTIMES, } often signify; and, as Dr. John-
OFTTIMES, } son observes, the latter was
probably a long time the plural of the former: of-
times and oftentimes are, frequently; many times.

In labours more abundant, in stripes above mea-
sure, in prisons more frequent, in deaths *oft*. 2 Corinthians ii. 28.

Use a little wine for thy stomach's sake, and thine
often infirmities. 1 Timothy v. 23.

Is our faith in the blessed Trinity a matter needless, to be so *oftentimes* mentioned and opened in the principal part of that duty which we owe to God, our public prayer? *Hooker.*

The queen that bore thee,
Oftener upon her knees than on her feet,
 Died every day she lived. *Shakespeare. Macbeth.*
 A lusty black-browed girl, with forehead broad
 and high,
 That *often* had bewitched the sea gods with her eye. *Drayton.*

Who was ever so wise as not sometimes to be a fool in his own conceit, *oftentimes* in the conceit of others? *Hall.*

It may be a true faith, for so much as it is; it is one part of true faith, which is *oft* mistaken for the whole. *Hawmand.*

Oftentimes nothing profits more
 Than self-esteem, grounded on just and right,
 Well managed. *Milton's Paradise Lost.*

These sort of speeches, issuing from just and honest indignation, are sometimes excusable, *oftentimes* commendable. *Barrow.*

Oftentimes before I hither did resort,
 Charmed with the conversation of a man
 Who led a rural life. *Dryden and Lee.*

Who does not more admire Cicero as an author, than as a consul of Rome, and does not *oftener* talk of the celebrated writers of our own country in former ages, than of any among their contemporaries? *Addison's Freshholder.*

The difficulty was, by what means they could ever arrive to places *often times* so remote from the ocean. *Woodward.*

It is equally necessary that there should be a future state, to vindicate the justice of God, and solve the present irregularities of Providence, whether the best men be *oftentimes* only, or always the most miserable. *Atterbury.*

Favours to none, to all she smiles extends,
Oft she rejects, but never once offends. *Pope.*

The sun
 Sheds weak and blunt his wide refracted ray,
 Whence glaring *oft* with many a broadened orb
 He frights the nations. *Thomson.*

Some men employ their health, an ugly trick,
 In making known how *oft* they have been sick,
 And give us in recitals of disease
 A doctor's trouble, but without the fees. *Cowper.*

OG. Heb. אֶבֶן, i.e. a cake. A king of Beshan, of a most gigantic stature. His bedstead was of iron, and was nine cubits long and four broad; which, according to some calculations, is sixteen feet five inches long, and above seven feet three inches broad. The learned Calmet, however, makes it only fifteen feet four inches long, and six feet ten inches broad. Wolfius makes Og more than thirteen feet high. The rabbis pretend that he lived before the flood, and preserved himself during the time of it, by mounting on the outside of the ark and receiving food from Noah, &c. When he heard of the defeat of Sihon, king of the Amorites, by Moses, he collected all his troops and attacked the Israelites at Edrei; but his numerous host was routed, himself killed, and his country conquered. The Ammonites some time afterwards carried off his iron bedstead. Num. xxi.; Deut. iii. 1—14.

OGÉ, a creole, or quarteroon, of St. Domingo, was, at the commencement of the revolution, established at Cape François in commerce. His affairs having drawn him to Paris, he was there

admitted into the society of Amis des Noirs, and warmly solicited the National Assembly in favor of his brethren. Meeting with little attention he returned to St. Domingo, resolved to adopt some more efficacious means for their freedom. In the quarter of Dondon, where he was born, he began by inviting all the people of color and negro slaves to join him, and an insurrection took place in November, 1790, in the Grande Riviere. The insurgents at first demanded nothing but freedom and equality; but their cause was ere long disgraced by crime. These, however are said not to be fairly attributable to their leader, but to his lieutenant Chavaannes. Troops of the national guard and of the line being sent against the blacks, they were obliged to give way; and Ogé, with a few of his followers, took refuge in the Spanish territories. Here he was given up by the governor to the French, tried before the superior council at Cape François, and condemned, with his lieutenant, to be broken on the wheel. Ogé, on hearing this sentence, took a measure of black seed in his hand, and covered them with a few white grains: he then shook them together, and said to his judges, 'Where are the whites?'

OGÉE, n. s. } A sort of moulding in ar-
 OGIVE. } chitecture, consisting of a round
 and a hollow, almost in the form of an S, and is the same with what Vitruvius calls cima. Cima reversa is an oggee with the hollow downwards.

OGEECHÉE, a river of Georgia, United States, which rises near the Apalachian Mountains, passes by Lexington, Louisville, and Georgetown, flows south-east nearly parallel with the Altamaha, into Ossabaw Sound, at Hardwick. Length 200 miles.

OGHAMS, a particular kind of steganography, or writing in cypher, practised by the Irish; of which there were three kinds: the first was composed of certain lines and marks, which derived their power from their situation and position, as they stand in relation to one principal line over or under which they are placed, or through which they are drawn; the principal line is horizontal, and serves for a rule or guide, whose upper part is called the left, and the under side the right: above, under, and through which line, the characters or marks are drawn, which stand in the place of vowels, consonants, diphthongs, and triphthongs. Some authors have doubted the existence of this species of writing in cypher, called ogham among the Irish; but several MSS. in this character still exist.

OGILBY (John), an eminent writer, born in or near Edinburgh, November 17th, 1600. His father having spent his estate, and being prisoner in the King's Bench, could contribute little to his education; however, he obtained some knowledge in the Latin grammar, and afterwards so much money as to procure his father's discharge from prison, and to bind himself an apprentice to a dancing-master in London; when, by his dexterity in his profession, he obtained money to buy out the remainder of his time, and to set up for himself. But, being afterwards appointed to dance in the duke of Buckingham's grand mask, he strained a vein in the inside of his leg,

which occasioned his being ever after somewhat lame. When Thomas earl of Strafford was made lord-lieutenant of Ireland he was entered as a dancing-master in his family, and made one of the earl's troop of guards; at which time he composed a humorous piece called the Character of a trooper. He was soon after appointed master of the revels in Ireland, and built a theatre at Dublin. About the end of the war in England, he left Ireland, and, being shipwrecked, came to London in a necessitous condition; but soon after walked to Cambridge, where, being assisted by several scholars, he became so complete a master of the Latin tongue, that in 1649 he published a translation of Virgil. He soon after learned Greek; and in 1660 published, in folio, a translation of Homer's *Iliad*, with Annotations. In 1662 he went into Ireland, where he was made master of the revels by patent. He then built another theatre in Dublin, which cost him about £1000. He published at London, in folio, a translation of Homer's *Odyssey*, with Annotations; and afterwards wrote two heroic poems, entitled the *Ephesian Matron*, and the *Roman Slaves*. He next composed the *Charolics*, an epic poem, in twelve books, in honor of king Charles I., but this was lost in the fire of London; when his house in White Friars was burnt down, and his whole fortune, except about £5, destroyed. He however, got his house rebuilt, set up a printing-office, was appointed cosmographer and geographic printer, and printed several large works, translated or collected by himself and his assistants, particularly his *Atlas*. He died in 1676.

OGIVE, in architecture, an arch or branch of a Gothic vault; which, instead of being circular, passes diagonally from one angle to another and forms a cross with the other arches. The middle, where the ogives cross each other, is called the key; being cut in form of a rose, or a cul de lampe. The members or mouldings of the ogives are called nerves, branches, or reins; and the arches which separate the ogives, double arches.

OGLE, *v. a. & n. s.* *Belgic oogh, ooghtler*; *Lat. oculus*. To survey wistfully; regard with a kind of sly fondness; one who thus gazes at an object.

From their high scaffold with a trumpet cheek,
And *ogling* all their audience, then they speak.

Dryden.

If the female tongue will be in motion, why should it not be set to go right? Could they talk of the different aspects and conjunctions of planets, they need not be at the pains to comment upon *oglings* and clandestine marriages.

Addison.

Upon the disuse of the neck-piece, the tribe of *oglers* stared the fair sex in the neck rather than in the face.

Id.

Jack was a prodigious *ogler*; he would *ogle* you the outside of his eye inward, and the white upward.

Arbutnot.

Whom is he *ogling* yonder! himself in his looking-glass.

Id.

SRA ANTH. Z—ds, sirrah! the lady shall be as ugly as I choose: she shall have a hump on each shoulder; she shall be as crooked as the crescent; her one eye shall roll like the bull's in Cox's museum; she shall have a skin like a mummy, and the beard of a Jew—she shall be all this, sirrah!—yet

I will make you *ogle* her all day, and sit up all night to write sonnets on her beauty.

Sherriden.

OGLETHORPE, a county in the north-west part of Georgia. Population 12,297. Chief town, Lexington.

OGLETHORPE (James Edward), a British officer, of a very ancient family in Yorkshire, born about 1698. He entered early into the army, and was made a captain-lieutenant in the queen's grenadiers in 1715. He obtained the rank of colonel, August 25th, 1737; of major-general, March 30th, 1745; lieutenant-general, September 13th, 1747; and of general, February 22d, 1765. He was elected M. P. for Haslemere in Surrey in 1722, and continued to represent that borough till 1754. In 1729, finding a gentleman, whom he went to visit in the Fleet prison, loaded with irons and otherwise barbarously used, he engaged in the philanthropic enquiry into the state of the jails, and was appointed chairman of the Committee of Enquiry by the House of Commons. In 1732 he was appointed governor of Georgia, in the settlement of which he engaged with that ardor which marked all his undertakings; and, after overcoming numberless difficulties, proved successful, though at the expense of large sums of his private fortune, which, it is said, were never repaid. In 1734 he returned to England, and was chosen deputy governor of the African Company; and in 1735 carried back with him to Georgia Messrs. John and Charles Wesley, with the pious intention of instructing the Indians. Returning to England, he raised a regiment, which he carried over to Georgia in 1738. In 1740 he attacked the Spaniards, took two forts, and besieged St. Augustine, but without success. In 1742 the Spaniards attacked the new settlement, but were repulsed. In 1745 he accompanied the duke of Cumberland into Scotland, which was his last military expedition. In 1754 he married Elizabeth Wright, an heiress, and spent the rest of his life in easy retirement at her seat of Cranham Hall in Essex; where he died, June 30th, 1785.

O'GLIO, *n. s.* *Span. olla*; *Port. olla*; or *Ital. alla* (a stewpan). A dish of medleys, or various kinds of meat; a hotchpotch, mental or literal.

These general motives of the common good, I will not so much as once offer up to your lordship, though they have still the upper end; yet, like great *oglios*, they rather make a shew than provoke appetite.

Suckling.

Where is there such an *oglio* or medley of various opinions in the world again, as those men entertain in their service, without any scruple as to the diversity of their sects and opinions?

King Charles.

He that keeps an open house, should consider that there are *oglios* of guests, as well as of dishes, and that the liberty of a common table is as good as a tacit invitation to all sorts of intruders.

L'Estrange.

OGLIO, a river of Austrian Italy, which has its source in the Alps, flows through the lake of Isco, traverses the plains between the Brescian and the Cremonese, and joins the Po near Borgoforte, eight miles from Mantua. It is navigable in the lower part of its course to Ponte-vico, and receives in its progress the Cherio, the

Milla, the Chiese, and a number of smaller streams. It gave name to a department of the late kingdom of Italy.

OGYGIA, the island of Calypso (Homer); placed by Pliny in the Sinus Scylaceus, in the Ionian Sea, opposite to the promontory Lacinium; by Mela who calls it Eac, in the strait of Sicily: others place it at the promontory Circæum, and call it the island of Circæ.

OH! *interj.* A note of pain, sorrow, or wonder.

He,
Like a full corned boar, a churning on,
Cried oh! and mounted.

Shakespeare. Cymbeline.

Oh me! all the horse have got over the river, what shall we do?
Walton's Angler.

My eyes confess it,
My every action speaks my heart aloud;
But oh the madness of my high attempt
Speaks louder yet! *Dryden's Spanish Fryar.*

Oh Sophonisba, Sophonisba, oh! *Thomson.*

Oh! that the present hour would lend
Another despot of the kind
Such chains as his were sure to bind. *Byron.*

Oh marked from birth, and nurtured for the skies,
In youth with more than learning's wisdom wise.

Canning.

OHETEROA, an island of the South Pacific, discovered by captain Cook, about twelve miles in circumference, without either harbour or anchorage. It has only a bay on the west coast, which is foul and rocky. The inhabitants are active and well made, of a dark brown complexion. Their clothing is of bark curiously colored: some wear bonnets, adorned with feathers. It has no coral reef, and is in long. 150° 47' W., lat. 22° 27' S.

OHIO, a river of the United States, formed by the union of the Alleghany and the Monongahela, at Pittsburg. It separates Virginia and Kentucky on the south from the states of Ohio and Indiana, and the Illinois territory, on the north; and, after a W. S. W. course of 949 miles, joins the Mississippi, 193 miles below the Missouri, in long. 88° 58' W., lat. 37° N. From Pittsburg to its mouth, by a direct line, it is only 614 miles. The river varies in breadth from 400 to 1400 yards. At Cincinnati it is 534 yards, which may be regarded its mean breadth. It has an inland navigation. Its current is very gentle, and nowhere broken by any considerable falls, except at Louisville. The whole descent here, in two miles, is twenty-two feet and a half; but the current is not so broken but that boats have, in many instances, ascended the falls. A canal is contemplated around these falls.

The annual range from high to low water is upwards of fifty feet, and its extreme range about sixty feet. When lowest it may be forded in several places above Louisville. It is frozen over almost every winter near Pittsburg, and has been frozen about 400 miles below Pittsburg. The

navigation is generally suspended eight or ten weeks, during the winter, by floating ice. Its current, when at mean height, is estimated at three miles an hour; when very low, two miles. The river contains 100 islands, but there are none between the states of Ohio and Kentucky. Steam boats are now employed on this river with great advantage. The principal towns on the Ohio, below Pittsburg, are Steubenville, Wheeling, Marietta, Gallipolis, Maysville, Cincinnati, Louisville, and Jeffersonville.

The length of the Ohio, from Pittsburg to the Mississippi, as measured, according to its meanders, by captain Hutchins, is 1188 miles. But, according to the public surveys on the north bank, it is only 949 miles. The following table of distances is taken from Dr. Drake, and is founded chiefly on those surveys. This table differs considerably from that of Hutchins:—

| | Miles. | Whole dist. |
|-------------------------------|--------|-------------|
| From Pittsburg to | | |
| Big Beaver River | 30 | 30 |
| Little Beaver River | 13 | 43 |
| Steubenville | 26 | 69 |
| Wheeling | 26 | 95 |
| Marietta | 83 | 178 |
| Great Kenhawa River | 87 | 265 |
| Big Sandy River | 47 | 312 |
| Scioto River | 40 | 352 |
| Maysville | 50 | 402 |
| Little Miami River | 56 | 458 |
| Cincinnati | 7 | 465 |
| Great Miami River | 20 | 485 |
| Kentucky River | 48 | 533 |
| Louisville | 54 | 587 |
| Salt River | 23 | 610 |
| Anderson's River | 98 | 708 |
| Green River | 52 | 760 |
| Wabash River | 61 | 821 |
| Shawneetown | 10 | 831 |
| Cave-in-rock | 20 | 851 |
| Cumberland River | 40 | 891 |
| Tennessee River | 12 | 903 |
| Fort Massie | 8 | 911 |
| Mississippi | 38 | 949 |

OHIO, one of the United States of North America, is bounded north by Michigan territory, east by Pennsylvania, south by the river Ohio, which separates it from Virginia and Kentucky, and west by Indiana. Long. 80° 35' to 84° 47' W., lat. 38° 30' to 42° N.: 216 miles long, and 216 broad; containing 39,128 square miles. Population in 1800 45,365; in 1810 230,760; and in 1815 it was estimated at 324,070. The number of militia in 1816 was 49,427.

Columbus is the seat of government; but Cincinnati is much the largest town. The other most considerable towns are Chillicothe, Steubenville, Zanesville, Marietta, Dayton, New Lancaster, New Lisbon, St. Clairsville, Urbana, Lebanon, Circleville, and Gallipolis. There are besides a number of other flourishing towns.

The Counties, number of Towns, population for 1810, and 1815, and the Chief Towns are exhibited in the following Table.

| Counties. | Towns. | Population. 1810. | Population. 1815. | Chief Towns. |
|----------------------|--------|----------------------|----------------------|------------------|
| Adams | 9 | 9,434 | 10,410 | West Union. |
| Ashtabula | | | 3,200 | Jefferson. |
| Athens | 4 | 2,791 | 3,960 | Athens. |
| Belmont | 11 | 11,097 | 12,200 | St. Clairsville. |
| Brown | | | | Ripley. |
| Butler | 9 | 11,150 | 11,890 | Hamilton. |
| Champaign | 9 | 6,303 | 10,460 | Urbana. |
| Clark | | | | Springfield. |
| Clermont | 8 | 9,965 | 12,240 | Williamsburg. |
| Clinton | 3 | 2,674 | 4,600 | Wilmington. |
| Columbiana | 17 | 10,878 | 13,600 | New Lisbon. |
| Coshocton | | | 3,000 | Coshocton. |
| Cuyahoga | 4 | 1,459 | 2,500 | Cleveland. |
| Dark | | | 1,500 | Greenville. |
| Delaware | 7 | 2,000 | 5,000 | Delaware. |
| Fairfield | 15 | 4,361 | 13,660 | New Lancaster. |
| Fayette | 4 | 1,854 | 3,700 | Washington. |
| Franklin | 8 | 3,486 | 6,800 | Franklinton. |
| | | | | COLUMBUS. |
| Gallia | 12 | 4,181 | 6,000 | Gallipolis. |
| Geauga | 8 | 2,917 | 3,000 | Chardon. |
| Guernsey | 9 | 3,051 | 4,800 | Cambridge. |
| Green | 6 | 5,870 | 8,000 | Xenia. |
| Hamilton | 11 | 15,258 | 18,700 | Cincinnati. |
| Harrison | | | 7,300 | Cadiz. |
| Highland | 7 | 5,760 | 7,300 | Hillsborough. |
| Huron | | | 1,500 | Huron. |
| Jackson | | | | Jackson. |
| Jefferson | 15 | 17,260 | 15,000 | Steubenville. |
| Knox | 5 | 2,149 | 3,000 | Mount Vernon. |
| Licking | 7 | 3,852 | 6,400 | Newark. |
| Logan | | | | Belville. |
| Madison | 6 | 1,603 | 2,100 | New London. |
| Medina | | | | Mecca. |
| Miami | 6 | 3,941 | 5,910 | Troy. |
| Monroe | | | 1,200 | Woodsfield. |
| Montgomery | 7 | 7,722 | 13,700 | Dayton. |
| Morgan | | | | |
| Muskingum | 11 | 10,036 | 11,200 | Zanesville. |
| Perry | | | | Somerset. |
| Pickaway | 10 | 7,124 | 9,260 | Circleville. |
| Pike | | | | Piketon. |
| Portage | 9 | 2,995 | 6,000 | Ravenna. |
| Preble | 7 | 3,304 | 5,509 | Eaton. |
| Richland | | | 3,900 | Mansfield. |
| Ross | 16 | 15,514 | 18,000 | Chillicothe. |
| Scioto | 9 | 3,399 | 3,870 | Portsmouth. |
| Stark | 7 | 2,734 | 6,625 | Canton. |
| Trumbull | 19 | 8,671 | 10,000 | Warren. |
| Tuscarawas | | 3,045 | 3,880 | N. Philadelphia. |
| Warren | 5 | 9,925 | 12,000 | Lebanon. |
| Washington | 12 | 5,991 | 3,800 | Marietta. |
| Wayne | | | 7,100 | Wooster. |
| 52 | 320 | 230,760 | 322,790 | |

There have been twenty-nine banks chartered in this state; and charters have been granted for three institutions, styled universities, in this state, at Athens, Cincinnati, and Oxford. The Ohio university at Athens has commenced its

operations. There is a respectable literary seminary also at Cincinnati, and academies have been established at Athens, Burton, Chillicothe, Dayton, Lebanon, Marietta, Putnam, Steubenville, Tallmadge, Worthington, and Xenia. In but

few of these, however, are kept regular classical schools. Common schools are encouraged more or less throughout the state.

The number of ministers of the several denominations of Christians in Ohio, in 1817, was stated as follows:—Presbyterians forty-eight; Methodists thirty-four; Baptists thirteen; New Lights of the Christian church nine; Seceders six; Episcopalians three; Congregationalists three. The number of meetings of Friends in this state and Indiana was stated at fifty-nine.

The legislature is composed of a senate and house of representatives. The latter, who must not exceed seventy-two, nor be less than thirty-six in number, are elected annually. The senators, who must equal one third, but not exceed one-half of the number of representatives, are chosen biennially. The governor is elected biennially by the people. The annual elections are held on the second Tuesday in October. This state sends six members to congress.

The rivers which flow into Lake Erie on the north are Maumee, Sandusky, Huron, Vermilion, Black, Cuyahoga, Grand, and Ashtabula; those in the south flowing into the Ohio are the Muskingum, Hockhocking, and Little and Great Miami. The Au-Glaize and St. Mary's in the western part of the state are branches of the Maumee.

The interior and northern parts of the country bordering on Lake Erie are generally level, and in some places marshy. Nearly one-third of the eastern and south-eastern part is very hilly and broken. The hills are exceedingly numerous, but they seldom rise into considerable mountains. Immediately upon the banks of the Ohio, and several of its tributaries, are numerous tracts of interval or meadow land, of great fertility. In the interior, on both sides of the Scioto, and on the Great and Little Miami, are perhaps the most extensive bodies of level and rich land in the state. In many parts there are large prairies, particularly on the head waters of the Muskingum and Scioto, and between the Scioto and the two Miamies. Some of these prairies are low and marshy, producing large quantities of coarse grass, from two to five feet high; some of which is of a tolerably good quality: other prairies are elevated, and are frequently called barrens; not always on account of their sterility, for they are often fertile. The most elevated tracts of country between the rivers are the wettest and most marshy in the state; and the driest land is that which borders on the various streams of water. Among the forest trees are oak of various species, maple, hickory, beech, birch, poplar, sycamore, ash, pawpaw, buckeye, cherry, &c.

Wheat is the staple production. Other sorts of grain, various kinds of fruit, grass, hemp, and flax, are extensively cultivated. From seventy to 100 bushels of Indian corn, it is said, have in many instances been produced in a year from one acre.

Coal is found in great quantities in the eastern parts. Iron ore has been discovered and wrought pretty extensively in several places, particularly on the south of Licking River, four miles west of Zanesville, on Brush Creek, and in some other places. Salt springs are found on some of the eastern waters of Muskingum, and on Salt

Creek, twenty-eight miles south-east of Chilli-cothe, where there are considerable salt works.

The summers are warm and pretty regular, though somewhat subject to tornadoes. Spring and autumn are very pleasant; and the winters generally mild. In some parts near the marshes and stagnant waters the inhabitants are subject to the fever and ague; but the climate generally is accounted remarkably healthy. The north-west part of the state, amounting in extent to nearly 8000 square miles, remains in the possession of the Indian tribes.

OHIO, a county in the north-west part of Virginia, bounded north-west and west by the Ohio, north by Brooke county and Pennsylvania, east by Pennsylvania, south-east by Monongalia and Harrison counties, and south-west by Wood county. Population 8175. Chief town Wheeling. Also a county in the west part of Kentucky, on the Ohio. Population 3792. Chief town Hartford.

OHITTAHOO, an island of the South Pacific, about nine miles in length and twenty-one in circuit. A ridge of hills runs through its length. It is divided by deep and fertile valleys, adorned with trees, and watered by brooks and cascades. On the western side are several coves. That in which the Europeans usually anchor is situated in long. 139° 8' W., lat. 9° 55' S. This island, and the three which lie nearest it, were discovered in July 1595 by Alvaro Mendana, who named them, in honor of the viceroy of Peru, Las Marquesas de Mendocana.

OHLAU, a town of Prussian Silesia, on the river Ohlau, fourteen miles south-east of Breslau. A large quantity of tobacco is raised in the environs. Population 2800.

OHRDRUFF, a town of Saxe-Gotha, the chief place of the county of Gleichen, a territory belonging to the prince of Hohenlohe. It stands at the commencement of the forest of Thuringia, on the Ohr. It is surrounded with a wall, and has a considerable number of manufacturing establishments, such as paper, saw and oil mills: the weaving of woollen and linen is also carried on. Its bleachfields are of some extent. Inhabitants 4200. Ten miles south of Gotha.

OIL, *n. s. & v. a.* Sax. *ael*; Fr. *huile*; Ital. *oglio*; Latin *oleum*; Gr. *elaion*. The expressed juice of the olive; any unctuous expressed juice of this kind: to lubricate or cover with oil: oil-color is a color made by grinding various substances in oil: oiliness, unctuousness; oily quality: oil-man and oil-shop are the man who deals in oils, and place where they are sold: oily means consisting of, containing or resembling oil: oily-grain and oily-palm are plants.

Being pure oil olive beaten for the light. *Erad.*
This oily rascal is known as well as Paul's;
Go call him forth. *Shakespeare. Henry IV.*
Basil hath fat and succulent leaves; which oiliness, if drawn forth by the sun, will make a very great change. *Bacon.*
The cloud, if it were oily or fatty, will not discharge; not because it is thick faster, but because air preyeth upon water and flame, and fire upon oil. *Id. Natural History.*

The men sell a rubbing of armour, which a great while had lain *oiled*. *Watton.*

Flame is grosser than gross fire, by reason of the mixture with it of that viscous *oily* matter, which, being drawn out of the wood and candle, serves for fuel. *Digby.*

Smoke from unctuous bodies, and such whose *oiliness* is evident, he nameth *nidor*. *Browne.*

Amber will attract straws thus *oiled*, it will convert the needles of dials, made either of brass or iron, although they be much *oiled*, for in those needles consisting free upon their center there can be no adhesion. *Id. Vulgar Errors.*

Oilcolours, after they are brought to their due temper, may be preserved long in some degree of softness, kept all the while under water. *Boyle.*

After this expressed *oil*, we made trial of a distilled one; and for that purpose made choice of the common *oil* or spirit. *Id.*

Chyle has the same principles as milk, viscosity from the caseous parts, an *oiliness* from the butyrateous parts, and an acidity from the tartareous. *Floyer.*

The flesh of animals which live upon other animals is most antacid; though offensive to the stomach sometimes by reason of their *oiliness*. *Arbuthnot on Aliments.*

In most birds there is only one gland; in which are divers cells, ending in two or three larger cells, lying under the nipple of the *oil* bag. *Derham.*

Oil with chemists called sulphur is the second of their hypostatical, and of the true five chemical principles. It is an inflammable, unctuous, subtle substance, which usually rises after the spirit. The chemists attribute to this principle all diversity of colours. There are two sorts of *oil*; one of which will swim upon water, as *oil* of aniseed and lavender, which the chemists call *essential*; and another kind, which probably is mixt with salts, and will sink in water, as the *oil* of guaiacum and cloves. *Harris.*

Swift *oils* many a spring which Harley moves. *Swift.*

A curious artist long inured to toils
Of gentler sort, with combs, and fragrant *oils*,
Whether by chance, or by some god inspired,
So toucht his curls, his mighty soul was fired.

Young.

—So, warm and buoyant in his *oily* mail,
Gambols on seas of ice the unwieldy whale;
Wide waving fins round floating islands urge
His bulk gigantic through the troubled surge.

Darwin.

Oils are defined by modern chemists to be proper juices of a fat or unctuous nature, either solid or fluid, indissoluble in water, combustible with flame, and volatile in different degrees. They are never formed but by organic bodies, and all substances in the mineral kingdom which present oily characters have originated from the action of vegetable or animal life. Oil then is a term which comprizes a great multitude of unctuous liquids, which, when dropped upon paper, sink into it, and make it semi-transparent; or, in common language, give it a greasy stain. Many of these have been known from a very remote period, and especially those which are appropriated to burning in lamps, since we know that lamps furnished with this material were in use as far back as the epoch of Abraham. The olive plant was very early cultivated, and oil extracted from it in Egypt. Cecrops introduced it into Greece from Sais, a town of Lower Egypt, where it had long been cultivated, and taught

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the Athenians the method of obtaining the oil; and from Greece the use of olive oil has progressively spread over all Europe.

It is, however, a singular circumstance that Homer makes no mention of the use of lamps, and constantly describes his heroes as lighted by torches of wood; from which circumstance we may safely collect that the Greeks did not appropriate oil to this purpose till a period subsequent to the Trojan war.

In the comprehensive sense in which the term is employed in modern chemistry, it has been necessary to arrange the substances which it comprises under different heads. Thus unctuous vegetable oils comprehend those which are usually known under the name of fixed, expressed, or heavy oils. Fixed oil is mostly procured from the fruits or seeds of vegetables, by expression, or by decoction with water. When pure it is inodorous, and almost perfectly insipid; but is often mixed with the mucilaginous or extractive matter of the vegetable from which it is extracted; from which it acquires taste and odor, and by which the oils of particular vegetables are distinguished from each other. Cold-drawn oil is more pure than when expressed with the aid of heat, or extracted by decoction. Fixed oils are thick and unctuous, lighter than water, congeal by exposure to cold, and some are even concrete in the usual temperature. Fixed oil is insoluble in water or alcohol. Exposed to warm air it absorbs oxygen, becomes thick and colored, acquires a disagreeable odor, and a sharp unpleasant taste, changing to what is called rancescence. It boils at 600° of Fahrenheit, is changed into vapor which is readily inflamed, and is thereby converted into water and carbonic acid. Without materially raising its temperature it burns imperfectly in a common lamp, giving out a considerable quantity of smoke, which consists of carbonaceous matter and empyreumatic oil. With a very slender wick, or a cylindrical one properly managed, it is almost totally converted into water and carbonic acid, as in the combustion of its vapor. By distillation, in close vessels, it loses its mildness and unctuousity, becomes more limpid and volatile, and a portion of carbonaceous matter is left in the retort. Transmitted through an ignited tube it is converted into carbonic acid and hydro-carbonic gas. Sulphuric acid renders it black; part of the oxygen from the acid combines with the hydrogen of the oil, carbonaceous matter is deposited, and a thickish liquid, having a hepatic smell, is formed, which has not hitherto been analysed, but which may probably contain sulphur, or its oxide, combined with a part of the oil, in a state similar to petroleum. Nitric acid thickens expressed oil; and when empyreumatic or rancid, from expression by heat or otherwise, readily sets it on fire. Oxymuriatic acid thickens it, and in some instances renders it concrete. All these changes deserve minute investigation.

Water seems to be incapable of combining with fixed oil in any proportion. If the two fluids are strongly shaken together in a half filled phial, the oil is broken into very minute globules, and thus gives the water the appearance of thin milk or whey; but, after standing for a few se-

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conds, the whole of the oil rises to the surface, and the two liquors remain as clear and distinct as at first. That a considerable attraction, however, subsists between the water and the oil is manifest from the well known fact that if a drop of oil be let fall into a basin of water it does not retain its globular form, but immediately spreads itself into a thin iridescent film, with which the whole surface of the water is covered.

The method of procuring oils by expression is very simple: thus if either sweet or bitter almonds, that are fresh, be pounded in a mortar, the oil may be forced out with a press, not heated: and in the same manner should the oil be pressed from linseed and mustard. The avoiding the use of heat, in preparing those oils intended for internal medicinal use, is of great importance, as heat gives them a very prejudicial rancidness. This method holds of all those vegetable matters that contain a copious oil in a loose manner, or in certain cavities or receptacles; the sides of which being broken or squeezed makes them let go the oil they contain; and thus the zest or oil of lemon peel, orange peel, citron peel, &c., may be readily obtained by pressure, without the use of fire. But how far this method of obtaining oils may be applied to advantage seems not hitherto considered. It has been commonly applied to olives, almonds, linseed, rapeseed, beech mast, ben-nuts, walnuts, bay-berries, mace, nutmeg, &c., but not, that we know of, to juniper berries, cashew-nuts, Indian cloves, pine-apples, and many other substances that might be enumerated both of foreign and domestic growth. It has, however, been of late successfully applied to mustard-seed, so as to extract a curious gold-colored oil, leaving a cake behind fit for making the common table mustard. Certain dry matters, as well as moist ones, may be made to afford oils by expression, by grinding them into a meal, which being suspended to receive the vapor of boiling water will thus be moistened so as to afford an oil in the same manner as almonds; and thus an oil may be procured from linseed, hemp-seed, lettuce-seed, white poppy-seed, &c. Oils obtained by expression should be suffered to deplete themselves by standing in a moderately cool place, to separate from their water, and deposit their feces; from both which they ought to be carefully freed. And if they are not thus rendered sufficiently pure they may be washed well with fresh water, then thoroughly separated from it again by the separating glass, whereby they will be rendered bright and clear.

In the arts fixed oils are of the most extensive utility. They are employed in the fabrication of soaps, for mixing colors in painting, for some kinds of varnish, and for defending substances from the action of air and moisture. The greater or less period of time these unctuous substances have been subjected to the action of fire, the greater or less is their degree of thickness and consistency. The oil of walnuts is especially serviceable to the painter in grinding and diluting his colors; and that of the aspic (a species of lavender) has also been strongly recommended for the purpose of rendering the colors already mixed smoother, firmer, and more siccative. The oil of the white poppy, extracted from the plant

of that name, is clearer and whiter than any other. That produced from flax is of a deep yellow, and very fat. M. Millan speaks of boiling this or walnut oil with litharge and onions until the latter are reduced to cinder: this composition, he says, is useful to mix with black, brown, and other colors which have little body and do not dry readily.

Expressed oil unites, by boiling, with sulphur into a compound which has an excessively offensive odor, and a very disagreeable acrid taste, usually called balsam of sulphur. It likewise combines with phosphorus, and unites with gum, resin, and several other vegetable products. With mucilage it forms a milky compound, called in pharmacy emulsion, and with sugar what is called oleo-saccharum. The ultimate elements of expressed oil, so far as is yet known, are carbon, hydrogen, and oxygen.

Volatile or essential oil is procurable from a variety of parts of many vegetables, usually by distillation with water. A small part unites with the distilled water, and the rest swims, for the most part, on the surface, though a few of these oils are heavier than water. Sometimes this oil is contained in distinct vesicles of the vegetable, and is obtained by expression. In volatile oil the peculiar odor of each plant is generally found, from which the term essential is derived; and, although from some highly odorant vegetables very little volatile oil is procurable, and a considerable quantity from such as have little odor, it would appear that the smell emitted by odorant vegetables is produced by its natural evaporation.

Volatile oil is odorous, sapid, and pungent. It is for the most part liquid, even in low temperatures, though some congeal in moderate degrees of cold, and others are concrete in the ordinary temperatures. It dissolves sparingly in water; to which it communicates its peculiar odor, taste, and pungency; as likewise to alcohol and proof spirits, in which it is more abundantly soluble. Both these solutions are usually accomplished by distillation, but may likewise be formed by other means. That with water is called, in pharmacy, simple distilled water, or merely water of the peculiar vegetable; with proof-spirit or alcohol, it gets the name of compound distilled water, or spirit of the vegetable; when in large quantity, combined with alcohol, it is denominated essence or quintessence, and is then more readily soluble in water, and in larger proportion.

Exposed to the air, volatile oils gradually lose their peculiar odors, are thickened, and finally become concrete, resembling resins; often depositing acid crystals, and sometimes granules resembling camphor. By moderate heat, they are volatilised without change; but are partially decomposed by greater heat than is necessary for distillation. Heated in contact with air, they are more volatile, more readily inflammable, and produce more water in combustion, than fixed oils, and consequently contain a larger proportion of hydrogen. By the acids, they are oxidated, becoming black with sulphuric acid. Nitric acid, especially when mixed with sulphuric, readily sets them on fire. Dilute nitric acid, and oxymuriatic, convert them into resinous sub-

stances by oxidation. They combine with, or dissolve, sulphur, phosphorus, resin, and camphor; but combine difficultly and sparingly with the alkalies. By sugar, mucilage, and some other vegetable products, they are rendered miscible with water, in the state of emulsion. Previously united with alcohol, into what has been called essence, they are considerably soluble in water. Their ultimate elements seem the same with those of fixed oils.

Many of the essential oils being dear, it is very common to adulterate them several ways, to render them cheaper. These several ways seem reducible to three general kinds, each of which has its proper method of detection, viz. 1st, With expressed oils; 2dly, With alcohol; and, 3dly, With cheaper essential oils. If an essential oil be adulterated with an expressed oil, it is easy to discover the fraud, by adding a little spirit of wine to a few drops of the suspected essential oil, and shaking them together; for the spirit will dissolve all the oil that is essential, or procured by distillation, and leave all the expressed oil, that was mixed with it, untouched. If an essential oil be adulterated with alcohol, or rectified spirit of wine, it may be done in proportion, up to that of an equal quantity, without being easily discoverable either by the smell or taste: the way to discover this fraud is to put a few drops of the oil into a glass of fair water; and, if the oil be adulterated with spirit, the water will immediately turn milky, and, by continuing to shake the glass, the whole quantity of spirit will be absorbed by the water and leave the oil pure at top. Finally, if an essential oil be adulterated by a cheaper essential oil, this is commonly done very artfully; the method is to put fir-wood, turpentine, or oil of turpentine, into the still, along with the herbs to be distilled for their oil, such as rosemary, lavender, origanum, &c., and by these means the oil of turpentine distilled from these ingredients comes over in great quantity, and intimately blended with the oil of the genuine ingredient. The oils thus adulterated always discover themselves in time, by their own flavor being overpowered by the turpentine smell; but the ready way to detect the fraud is to drench a piece of rag, or paper, in the oil, and hold it before the fire; for thus the grateful flavor of the plant will fly off, and leave the naked turpentine scent behind.

The next class of oils are those made by infusion or decoction, wherein the virtues of some herb or flower are drawn out in the oil; as the oils of roses, chamomile, hypericum, alder, &c. However, these require to be differently treated: thus, for the scented flowers, particularly roses, insolation does best; because much boiling would exhale their more fragrant parts; but oils impregnated with green herbs, as those of chamomile and alder, require long boiling, before they receive the green color desired. In general no oils will bear to be boiled any longer than there remains some aqueous humidity, without turning black. There are many compound oils prepared in the same manner, viz. by boiling and insolation, and then straining off the oil for use. The same contrivance has likewise its use in making essences for the service of the per-

fumer; not only where essential oils cannot be well obtained in sufficient quantities, but also where they are too dear. The essential oil of jessamine flowers, honey-suckles, sweet-briar, damask roses, lilies of the valley, &c., are either extremely dear, or scarcely obtainable by distillation; and, in some of them, the odorous matter is so subtle as almost to be lost in the operation. But if these flowers be barely infused in fine oil of nuts, or oil of ben, drawn without heat and kept in a cool place, their subtle odorous matter will thus pass into the oil, and richly impregnate it with their flavor. And these essences may be rendered still more perfect by straining off the oil at first put on, and letting it stand again without heat, upon fresh flowers; repeating the operation twice or thrice.

Drying oils are formed of linseed oil, prepared by means of boiling, sometimes with and sometimes without the addition of other substances. Those commonly added to oil, in this preparation, are white vitriol, sugar of lead, seed-lac, gum mastic, gum sandarac, gum anise, gum copal, umbre, colcothar, litharge, and red-lead. A drying oil for the nicer works may be prepared by boiling two ounces of gum sandarac; white vitriol, and sugar of lead, of each one ounce; in a pint of nut or poppy oil, till the solid ingredients be dissolved, and the mixture becomes of the color of linseed oil. For coarser work, take one gallon of linseed oil, one pound of litharge of gold or silver, half a pound of white vitriol, and sugar of lead, gum arabic, and umbre, of each a quarter of a pound; boil them as long as the discoloring of the oil, which is the gradual consequence of boiling, will allow. That made for sale is prepared by boiling one gallon of linseed oil, and one pound and a half of red-lead, as long as the color will bear it. When the calxes of lead are united in small quantity with oil they diminish its fluidity, and dispose it to dry more readily. These oils are much used in painting, on account of their drying quality.

The following is a list of the plants which yield the fixed oils occurring usually in commerce:—

- | | |
|--|----------------------|
| 1. <i>Linum usitatissimum</i> | } Linseed oil. |
| et perenne | |
| 2. <i>Corylus avellana</i> | } Nut oil. |
| 3. <i>Juglans regia</i> | |
| 4. <i>Papaver somniferum</i> | Poppy oil. |
| 5. <i>Cannabis sativa</i> | Hemp oil. |
| 6. <i>Sesamum orientale</i> | Oil of sesamum. |
| 7. <i>Olea Europæa</i> | Olive oil. |
| 8. <i>Amygdalus communis</i> | Almond oil. |
| 9. <i>Gulandrin Mohrinza</i> | Oil of behen. |
| 10. <i>Cucurbita pepo et melapepo</i> | } Cucumber oil. |
| 11. <i>Fagus sylvatica</i> | |
| 12. <i>Sinapis nigra et arvensis</i> | } Oil of mustard. |
| 13. <i>Helianthus annuus et perennis</i> | |
| 14. <i>Brassica napus et campestris</i> | Rapeseed oil. |
| 15. <i>Ricinus communis</i> | Castor oil. |
| 16. <i>Nicotiana tabacum et rustica</i> | } Tobacco seed oil. |
| | |

17. *Prunus domestica* . . . Plum-kernel oil.
 18. *Vitis vinifera* . . . Grapeseed oil.
 19. *Theobroma cacao* . . . Butter of cacao.
 20. *Laurus nobilis* . . . Laurel oil.
 21. *Arachis hypogæa* . . . Ground-nut oil.

The following table contains a copious list of plants which yield volatile oils. The part of the plant from which it is extracted, and the English name of the oil, are added in separate columns.

| Plants. | Parts. | Oil of | Color. |
|--|--------------------|--------------------|-----------------|
| 1. <i>Artemisia absinthium</i> . . . | Leaves | Wormwood . . . | Green. |
| 2. <i>Acorus calamus</i> | Root | Sweet flag . . . | Yellow. |
| 3. <i>Myrtus pimenta</i> | Fruit | Jamaica pepper . | Yellow. |
| 4. <i>Anethum graveolens</i> . . . | Seeds | Dill | Yellow. |
| 5. <i>Angelica archangelica</i> . . . | Root | Angelica | |
| 6. <i>Pimpinella anisum</i> | Seeds | Anise | White. |
| 7. <i>Illicium an. atum</i> | Seeds | Stellat. anise . . | Brown. |
| 8. <i>Artemisia vulgaris</i> | Leaves | Mugwort | |
| 9. <i>Citrus aurantium</i> | Rind of the fruit | Bergamot | Yellow. |
| 10. <i>Meloleuca leucodendra</i> . . . | Leaves | Cajeput | Green. |
| 11. <i>Eugenia caryophyllata</i> . . . | Capsules | Cloves | Yellow. |
| 12. <i>Carum carui</i> | Seeds | Caraways | Yellow. |
| 13. <i>Amomum cardamomum</i> . . . | Seeds | Card-seeds . . . | Yellow. |
| 14. <i>Carlina acaulis</i> | Roots | | White. |
| 15. <i>Scandix chaerefolium</i> | Leaves | Chervil | Sulph. yellow. |
| 16. <i>Matricaria chamomilla</i> . . . | Petals | Chamomile . . . | Blue. |
| 17. <i>Laurus cinnamomum</i> | Bark | Cinnamon | Yellow. |
| 18. <i>Citrus medica</i> | Rind of the fruit | Lemons | Yellow. |
| 19. <i>Cochlearia officinalis</i> . . . | Leaves | Scurvy grass . . | Yellow. |
| 20. <i>Copaifera officinalis</i> | Extract | Copaiba | White. |
| 21. <i>Coriandrum sativum</i> | Seeds | Coriander seed . | White. |
| 22. <i>Crocus sativus</i> | Pistils | Saffron | Yellow. |
| 23. <i>Piper cubeba</i> | Seeds | Cubeb pepper . . | Yellow. |
| 24. <i>Laurus culilaban</i> | Bark | Culliban | Brown yellow. |
| 25. <i>Cuminum cymium</i> | Seeds | Cummi | Yellow. |
| 26. <i>Inula helenium</i> | Roots | Elecampane . . . | White. |
| 27. <i>Anethum feniculum</i> | Seeds | Fennel | White. |
| 28. <i>Croton eleutheria</i> | Bark | Cascarilla . . . | Yellow. |
| 29. <i>Maranta galanga</i> | Roots | Galanga | Yellow. |
| 30. <i>Hyssopus officinalis</i> | Leaves | Hyssop | Yellow. |
| 31. <i>Juniperus communis</i> | Seeds | Juniper | Green. |
| 32. <i>Lavendula spica</i> | Flowers | Lavender | Yellow. |
| 33. <i>Laurus nobilis</i> | Berries | Laurel | Brownish. |
| 34. <i>Prunus laurocerasus</i> | Leaves | Laurocerasus . . | |
| 35. <i>Levisticum logisticum</i> . . . | Roots | Loveage | Yellow. |
| 36. <i>Myristica moschata</i> | Seeds | Mace | Yellow. |
| 37. <i>Origanum majorana</i> | Leaves | Marjoram | Yellow. |
| 38. <i>Pistacia lentiscus</i> | Resin | Mastic | Yellow. |
| 39. <i>Matricaria parthenium</i> . . . | Plant | Motherwort . . . | Blue. |
| 40. <i>Melissa officinalis</i> | Leaves | Balm | White. |
| 41. <i>Mentha crispæ</i> | Leaves | | White. |
| 42. <i>Mentha piperitis</i> | Leaves | Peppermint . . . | Yellow. |
| 43. <i>Achillea millefolium</i> | Flowers | Millefoil | Blue and green. |
| 44. <i>Citrus aurantium</i> | Leaves | Neroli | Orange. |
| 45. <i>Origanum creticum</i> | Flowers | Spanish hop . . . | Brown. |
| 46. <i>Apium petroselinum</i> | Roots | Parsley | Yellow. |
| 47. <i>Pinus sylvestris et abies</i> . . . | Wood and resin . | Turpentine . . . | Colorless. |
| 48. <i>Piper nigrum</i> | Seeds | Pepper | Yellow. |
| 49. <i>Rosmarinus officinalis</i> | Plant | Rosemary | Colorless. |
| 50. <i>Mentha pulegium</i> | Flowers | Pennyroyal . . . | Yellow. |
| 51. <i>Genista canariensis</i> | Rhodium | Rhodium | Yellow. |
| 52. <i>Rosa centifolia</i> | Petals | Roses | Colorless. |
| 53. <i>Ruta graveolens</i> | Leaves | Rue | Yellow. |
| 54. <i>Juniperus sabina</i> | Leaves | Savine | Yellow. |
| 55. <i>Salvia officinalis</i> | Leaves | Sage | Green. |
| 56. <i>Santalum album</i> | Wood | Santalum | Yellow. |
| 57. <i>Laurus sassafras</i> | Root | Sassafras | Yellow. |
| 58. <i>Satureia hortensis</i> | Leaves | Satureia | Yellow. |
| 59. <i>Thymus serpyllum</i> | Leaves and flowers | Thyme | Yellow. |
| 60. <i>Valeriana officinalis</i> | Root | Valerian | Green. |
| 61. <i>Kæmpferia rotunda</i> | Root | Zedoary | Greenish blue. |
| 62. <i>Amomum zinziber</i> | Root | Ginger | Yellow. |
| 63. <i>Andropogon schænanthum</i> . . . | | Sira | Brown. |

TABLE OF VOLATILE OILS.

| Names. | Color. | Specific Gravity. | Consistency at 60°. Freezes at 14°. | Odor. |
|---------------------|---------|-------------------|-------------------------------------|----------------------------|
| Turpentine | None. | .792 | Fluid as water. | Strong. |
| Juniper | Green. | .611 | Very fluid. | Strong smell. |
| Rosemary | None. | .934 | Thin liquid. | Like the plant. |
| Mint | None. | .975 | Very fluid. | Agreeable. |
| Cloves | None. | 1.034 | Oily and very fluid. | Very fragrant. |
| Lemon | Yellow. | | Thin liquid. | Very agreeable. |
| Orange | Yellow. | .888 | Ditto. | Nearly similar. |
| Cinnamon | Yellow. | 1.035 | Oily and less liquid. | Pleasant. |
| Sassafras | None. | 1.094 | Oily. | Like the root. |
| Fennel | | .997 | Becomes solid at 50°. | |
| Tansy | | .946 | | Very strong. |
| Dill | | .994 | | |
| Caraway | None. | .94 | | Very strong and pungent. |
| Penny Royal | | .978 | | Agreeable, like the plant. |
| Cummin | | .975 | | |
| Nutmegs | None. | .948 | Like butter. | Very pleasant. |
| Aniseed | None. | | Becomes solid at 50°. | Very strong. |
| Thyme | Brown. | | Crystallises. | Like camphor. |
| Spike | Yellow. | .936 | | Very strong. |
| Lavender | None. | | Thin liquid. | Very agreeable. |
| Origanum | | .94 | | Very strong and acrid. |
| Wormwood | Green. | | | |
| Camomile | Blue. | | | |
| Hops | Green. | | Like butter. | Like the flower. |
| Parsley | Green. | | | |
| Bergamotte | Yellow. | | Not oily. Is solid at 23°. | Very pleasant. |
| Cardamom | None. | | Oily. | |
| Mace | | | Oily. | Agreeable. |
| Roses | None. | | | |
| Peppermint | Green. | | Thin liquid. | Very agreeable. |
| Savine | | | | Disagreeable. |
| Pepper | None. | | Like butter. | Very acrid. |

Several of the gum-resins, as myrrh and galbanum, yield an essential oil; and likewise the balsams, as benzoin, &c.

OIL, WHALE. See WHALE and BALANCE.

OILY PALM. See RICINUS.

OINT, *v. a.* } *Fr. oint*; of Lat. *unguo*,
OINTMENT, *n. s.* } *unctio*. To bedew or cover
with oil; to anoint (the more common word):
ointment is, unctuous matter more or less fluid;
unguent; salve.

There n'as quicksilver, litarge, ne brimston

Boras, cerus, ne oile of tartre non;

Ne ointment that wolde clense or bite,

That him might helpen of his whelkes white.

Chaucer.

Life and long health that gracious ointment gave,
And deadly wounds could heal, and rear again
The senseless corpse appointed for the grave.

Spenser.

They oint their naked limbs with mothered oil,

Or from the founts where living sulphurs boil

They mix a med'cine to foment their limbs.

Dryden.

Ismarus was not wanting to the war,

Directing ointed arrows from afar;

And death with poison armed. *Id. Æneid.*

OISE, DEPARTMENT OF THE, France, formed out of part of Beauvoisis and part of Valois, a small country once dependent on the province of the Isle of France, and taking its name from the river Oise, which crosses the eastern part. The

principal place of this prefecture is Beauvais; it is divided into four arrondissements, Beauvais, containing. 127,533 inhabitants; Clermont 85,419; Compiègne 90,142; and Senlis 72,723; making a total population of 375,817 souls on a superficial extent of 2682 square miles, yielding a territorial revenue of 25,609,000 francs. It is part of the first military division, having a royal court at Amiens, and consisting of three electoral arrondissements, which send five members to the chamber of deputies. This department is bounded on the north by that of the Somme; on the east by that of the Aisne; on the south by those of Seine-et-Marne and Seine-et-Oise, and on the west by those of the Lower Seine and the Eure.

The face of the country is intersected with hills, well cultivated plains, and rather extensive forests, of which that of Compiègne is the most remarkable. The soil is generally good, and fruitful in corn of a good quality, most of which serves for the supply of Paris; the same may be said of the vegetables, which are excellent in some of the cantons. Great quantities of hemp and rape seed, and very fine fruits, are produced here. In some parts the vine is cultivated with much care; but in general the wine is poor. There are some good pastures for cattle and sheep, the flesh of which is greatly esteemed. The soil is a fat, rich earth, cultivated with

horses, and yielding an ample supply for its inhabitants; it contains 83,320 hectares of forests (oak and birch), and 3500 of vineyards; the average produce of the hectare of arable land being estimated at thirty-nine francs, eighty centimes. Besides what has been mentioned there is abundance of game, especially hares and rabbits; also excellent fresh water fish, horses, mules, asses, pigs, poultry, and many bees. There are quarries of gray marble, free stone, mill stones, paving stone and plaster; crucible clay, potters' clay, marle, and turf.

The manufactures consist of woollen stuffs, calicoes, Holland lawns, cambrics, blond, black and white lace, printed cottons, carpets, caps, gold and silver lace, whip handles, walking sticks, turnery, ivory goods, fans, mirrors, spectacles, ropes, agricultural implements, china, delf, sulphate of iron, cotton yarn, paper, leather, and boat building. There is also a royal manufactory of tapestry. A considerable trade is carried on in corn, flour, and all the above articles. The principal rivers that water this department are, the Oise, the Aisne, and the Ourcq, navigable; the Thérain, the Avelon, the Bresche, the Nonette; and it is crossed by the great roads of Paris, Amiens, Abbeville and Rouën.

Orse, a river in France, which rises near Sélagne, in the kingdom of the Netherlands, at a short distance from the frontiers of France. It soon enters the department of the Aisne, passes by Hirson, Etrée-au-Pont, Guise, Origny, Ribemont, la Fere, Chauny, Noyon, Compiègne, Pont St. Maxence, Creil, Beaumont, l'Isle Adam, and Pontoise, and falls into the Seine, at Conflans St. Honorine. It begins to be passable for floats at Butor, and navigable at Chauny. Its navigation is very important, as it connects the canal of St. Quentin, and all the northern canals, with the Seine. In its course, which is about 165 miles, it receives the waters of the Serre, the canal of Crozat, the Aine, the Bresche, the Nonette, and several other streams.

OISEL (James), a Dutch lawyer, born in 1631. He became professor of civil law at Groningen; and wrote a treatise on ancient brass coins, entitled *Thesaurus selectorum numismatum antiquorum ære expressorum*; and several other works. He died in 1686, aged fifty-five.

OKA, a large navigable river in the central part of Russia, in Europe, which rises in the government of Orel, flows north-east, and, after receiving the Moskva, joins the Wolgà at Niznei-Novgorod. It receives a number of small streams.

OKEHAM or OAKHAM, the county town of Rutland, situate in a rich valley called the vale of Catnose, sixteen miles E. N. E. from Leicester, ninety-five from London. It consists of two parishes or manors, called the lord's hold and the dean's hold, the former being under the earls of Winchelsea, who hold annual courts, at which parish officers, &c., are chosen, the latter under the dean of Westminster, who holds a triennial court. The church is a spacious structure dedicated to All Saints, with a native chancel, side aisles, and tower, terminated by a lofty spire. Its ancient castle has long been demolished, and the building now called the castle is the hall where the assizes

are held and the public business of the county transacted; the town is well built. There are some well endowed free schools and alms houses, and an hospital. The noble mansion of the earl of Winchelsea is in the neighbourhood, near Burleigh on the hill, and is an extensive and magnificent structure, built of free-stone.

OK'ER, *n. s.* Or OCHRE, which see. A color.

And Klaius taking from his younglings cark,

Lest greedy eyes to them might challenge lay,

Busy with *oker* did their shoulders mark. *Sidney.*

Red *oker* is one of the most heavy colours; yellow *oker* is not so, because it is clearer. *Dryden.*

OKEY HOLE, a celebrated natural cavern of England, on the south side of Mendip hills. The entrance is in the fall of those hills, beset all about with rocks, and has near it a precipitate descent of nearly twelve fathoms deep, at the bottom of which there continually issues from the rocks a considerable current of water. The naked rocks above the entrance are about thirty fathoms high, and the whole ascent of the hill above is about a mile, and very steep. As you pass into this vault, you go at first upon a level; but, advancing farther, the way is rocky and uneven, sometimes ascending, and, sometimes descending. The roof of this cavern, in the highest part, is about eight fathoms from the ground, but in many places it is so low that one must stoop to get along. The breadth is not less various than the height, for in some places it is five or six fathoms wide, and in others not more than one or two. It is in length about 200 yards. At the farthest part of the cavern there is a stream of water, large enough to drive a mill, which passes all along one side of the cavern, and at length slides down about six or eight fathoms among the rocks and then, pressing through the clefts, falls into the valley. The river within the cavern is well stored with eels, and has some trouts. In dry summers a great number of frogs are seen all along this cavern, even to the farthest part of it; and on the roof are vast numbers of bats.

OKHOTZK, one of the four circles of the government of Irkoutsk, Asiatic Russia. It is a maritime territory, extending along the seas of Okhotzk, of Kamtschatka, and of Anadir, and both barren and unwholesome from the excessive moisture and thick mists. About ten or twelve miles inland there is a ridge of hills, which, though of no great elevation, arrest the influence of the sea air; and beyond them the trees grow well, and the meadows are rich.

OKHOTZK, the capital of the above circle, is built upon a long and narrow ridge, between the sea and the river Okhota, and composed chiefly of an accumulation of debris. It is upwards of three miles long, but not more than from 100 to 300 feet broad. The town contains about 130 houses, which extend in a line two-thirds of a mile long. It has a church, magazines, and a double row of shops, and is supported by being the channel of trade between Irkoutsk and Kamtschatka. The goods are conveyed down the Lena to Yakoutsck, thence up the Aldane to its confluence with the Judoma, then up the Judoma, till a short land carriage conveys them to Okhotzk. The journey from Okhotzk to Irkoutsk

is performed more easily by descending the Judoma and Aldane. In the land part of the route the goods are placed on pack horses or men's backs, as there are no waggons of any description. It can be performed only in spring, to avoid the danger of sinking in morasses. Long. 142° 44' E., lat. 59° 20' N.

OKHOTZK, SEA OF, a gulf of the Eastern Ocean, between Kamtschatka, the circle of Okhotzk, part of Chinese Tartary, and Saghalien. In its opening into the ocean are the Kurile Islands and part of Jesso.

OLATRUS (Nicolas), a Hungarian divine and historian, born at Hermanstadt. He was made chancellor of Hungary and archbishop of Stugonira. He wrote, 1. A Chronicle of his own time; 2. A History of Attila; and 3. A Description of Hungary. He died in 1568.

OLAVIDES (Paul, A. J.), a Spanish statesman and modern victim of the inquisition, was born in 1725 at Lima in Peru, of wealthy parents. At an early age he was appointed auditor of the province; but having, by the liberality of his opinions, given offence to the monks and friars, they had him sent to Spain, where he was committed to prison by the holy office, but shortly after liberated. He now took up his residence at Madrid, and was appointed agent for his Peruvian countrymen. Powerfully seconding the measures of the Spanish minister, the count d'Aranda, for the expulsion of the Jesuits, at length the government appointed him intendant of Andalusia, where he founded a new colony, which flourished greatly. But, having endeavoured to exclude as much as possible the monastic and mendicant orders, they charged him with heresy; and in Nov. 1776 he was arrested and thrown a second time into the dungeons of the inquisition. After two years' confinement he was brought up to receive his sentence. It was charged against him that he had in his library the French Encyclopedie, Bayle's Dictionary, Montesquieu's Spirit of laws, and the works of Voltaire and Rousseau, together with a letter from that philosopher to himself, containing the phrase — 'It is much to be wished that Spain possessed forty such persons as yourself.' Olavides was condemned to eight years' seclusion in a monastery to practise exercises of piety, and to be afterwards banished twenty leagues from all great cities; to be incapable of public employment, &c. But he contrived to escape from the convent, and took refuge in France and Geneva. On the death of Charles III. he was permitted to return to France, where he resided at the revolution; and under the reign of terror was imprisoned at Orleans. He employed the period of his confinement, and his subsequent leisure, in writing The Triumph of the Gospel, a work which attracted notice in his own country, and was translated into French. Its success induced those who had persecuted him to boast of his conversion, and they obtained his recall to Spain. Thither he went in 1798, and retired to his estate in Andalusia, where he died in 1803.

OLAX, in botany, a genus of the monogynia order, triandria class of plants: CAL. entire: COR. funnel-shaped and trifid; the nectarium tetraphyllous.

OLD, *adj.*

OLD-FASHIONED, *adj.*

OLD'EN,

OLD'NESS, *n. s.*

Sax. *ealb*; Dan. *ælde*; Goth. *alda*; Teut. *alt*. Ancient; of long existence or continuance; of a specified duration or length of life; past the middle of life; not new, young, or modern; (in a burlesque sense) more than enough; 'of old,' signifies from ancient times: oldfashioned, obsolete, not a-la-mode: olden, the ancient plural of old, now used only in poetry: oldness, quality of being old; old age; antiquity.

Raiment waxed not *old* upon thee.

Deuteronomy.

Then said I unto her that was *old* in adulteries, will they now commit whoredoms with her?

Ezek. xxxiii. 43.

To *old* age, since you yourself aspire,
Let not *old* age disgrace my high desire.

Sidney.

These things they cancel, as having been instituted in regard of occasions peculiar to the times of *old*, and as being now superfluous.

Hooker.

Plead you to me, fair dame? I know you not:
In Ephesus I am but two hours *old*,
As strange unto your town as to your talk.

Shakespeare.

How *old* art thou?—Not so young, sir, to love a woman for singing; nor so *old*, to doat on her for any thing. I have years on my back forty-eight.

Id. King Lear.

Blood hath been shed ere now, i' the' olden time,
Ere human statute purged the general weal.

Shakespeare.

This policy and reverence of ages makes the world bitter to the best of our times; keeps our fortunes from us till our *oldness* cannot relish them.

Id. King Lear.

When Gardiner was sent over as ambassador into France, with great pomp, he spoke to an *old* acquaintance of his that came to take his leave of him.

Camden's Remains.

Any man that shall live to see thirty persons descended of his body alive together, and all above three years *old*, makes this feast, which is done at the cost of the state.

Bacon.

He did enfold

Within an ox hide, slayed at nine years *old*,

All the' airie blasts, that were of stormie kinds.

Chapman.

Equal society with them to hold,
Thou need'st not make new songs, but sing the *old*.

Cowley.

Whether such virtue spent of *old* now failed

More angels to create. *Milton's Paradise Lost.*

The Latian king, unless he shall submit,

Own his *old* promise, and his new forget,

Let him in arms the power of Turnus prove.

Dryden.

In days of *old* there lived of mighty fame,
A valiant prince, and Theseus was his name.

Id.

Some are offended that I turned these tales into modern English; because they look on Chaucer as a dry, *old-fashioned* wit, not worth reviving.

Id.

He that changes his condition, out of impatience and dissatisfaction, when he has tried a new one, wishes for his *old* again.

L'Estrange.

The Genoese are cunning, industrious, and inured to hardship; which was the character of the *old* Ligu-
riana.

Addison.

He is one of those *old-fashioned* men of wit and pleasure, that shews his parts by raillery on marriage.

Id.

An healthy *old* fellow, that is not a fool, is the happiest creature living. *Steele.*

He must live in danger of his house falling about his ears, and will find it cheaper to build it from the ground in a new form ; which may not be so convenient as the *old*. *Swift.*

'Tis greatly wise to know, before we're told,
The melancholy news that we grow *old*. *Young.*

And then no person should be permitted to kill characters but qualified *old* maids and disappointed widows. *Sheridan.*

Thou grow'st *old* rosy wine, but on earth what appears,
Whose virtues like thine still increase with its years. *Byron.*

Story, Lord bless you, I have none to tell, sir,
Only last night a drinking at the Chequers,
This poor *old* hat and breeches, as you see, were
Torn in a scuffle. *Canning.*

OLDCASTLE (Sir John), called the good lord Cobham, was born in the reign of Edward III., and was the first author, as well as the first martyr, among the English nobility : he obtained his peerage by marrying the heiress of that lord Cobham who with so much virtue and patriotism opposed the tyranny of Richard II. By his means the famous statute against provisors was revived, and guarded against by severe penalties ; he was one of the leaders of the reforming party ; was at great expense in procuring and disper-

sing copies of Wickliffe's writings among the people, as well as by maintaining a number of his disciples as itinerant preachers. In the reign of Henry IV. he commanded an army in France, and compelled the duke of Orleans to raise the siege of Paris. In that of Henry V. he was accused of heresy, the growth of which was attributed to his influence. Being a domestic in the king's court, the king delayed his prosecution, that he might reason with him himself ; but, not being able to reclaim him to the church of Rome, he in great displeasure resigned him to its censure. He was apprehended and condemned for heresy ; but, escaping from the tower, lay concealed for four years in Wales, until the rumor of a pretended conspiracy was raised against him, and a price set upon his head. He was at last seized, and executed in St. Giles's Fields ; being hung alive in chains upon a gallows, and burned by a fire placed underneath. He wrote Twelve Conclusions, addressed to the Parliament of England.

OLDENBURG, GRAND DUCHY OF. The dominions of the duke of Oldenburg include several portions of territory in the north-west of Germany. The chief of them is Oldenburg Proper, almost surrounded by Hanover, and extending north to the shores of the German Ocean.

| | Area. | Population. |
|---|-------|-------------|
| Oldenburg Proper includes the country of Delmenhorst with the lordships of Varel, Jever, and Kniphausen | 2250 | 178,000 |
| The principality of Eutin or Lubeck | 200 | 20,000 |
| The lordship of Berkenfeld | 170 | 20,000 |
| Total | 2620 | 218,000 |

This duchy is divided into seven circles, having each a court of justice : the majority of the inhabitants are Lutherans, and well educated. The revenue is £126,000, and the contingent army 2000.

Oldenburg Proper is entirely flat, and greatly resembles Holland, many parts of the coast requiring similar dikes to prevent inundation. Here, and near the banks of the rivers, the soil is rich, but in many others it is marshy or sandy, and yields but little that is valuable. The climate is of course moist. The chief rivers are the Weser, Hunte, and Delme. The only small lake is the Dummersee. The population are chiefly employed in attending to cattle and fishing, as the country seldom grows sufficient grain to supply the wants of the inhabitants. Its common produce is grain, hemp, flax, and hops ; and a great many horses and cattle are bred. These, together with butter and cheese, are the articles of export. Amber is sometimes found on its coast, and turf is dug from the moors.

OLDENBURG, the capital of this duchy, is situated on the river Hunte. It is fortified, and, including the suburbs, has a population of about 5000. The palace of the grand duke, with three churches, three hospitals, and an observatory, are its chief public buildings. There is also a gymnasium, and a seminary for the instruction of schoolmasters. The courts of justice and government offices are situated here. It has also soap-houses, tanneries, and sugar refineries ; but

its chief trade is in wood. Few manufacturing establishments are to be found in this duchy ; and the linen, yarn, and stockings, that are made are produced by the peasants during the intervals of their other occupations. The illustrious house of Oldenburg have been allied to almost all the regal families of Europe.

OLDENBURG (Henry), a learned German, in the seventeenth century, descended from the ancient earls of Oldenburg in Westphalia. He was born in the duchy of Bremen ; and during the long parliament, in king Charles I. time, was appointed consul for his countrymen at London, after the usurpation of Cromwell : but, being discharged from that office, he was made tutor to lord Henry O'Bryan, an Irish nobleman, whom he attended to the university of Oxford, where he was admitted to study in the Bodleian library, in 1656. He was afterwards tutor to William lord Cavendish, and was acquainted with Milton the poet. During his residence at Oxford he became also acquainted with the members of that body there, who gave birth to the royal society ; upon the foundation of which he was elected fellow, and was chosen assistant secretary to Dr. Wilkins. He began the publication of the Philosophical Transactions in 1664 ; and held a correspondence with more than seventy learned persons, upon a vast variety of subjects, in different parts of the world. He was a constant correspondent of Mr. Robert Boyle, with whom he had a very intimate friendship ; and

translated several of his works into Latin. He continued to publish the Transactions, to No. XXXVI. June 25th, 1677; after which they were discontinued till January, 1678, when his successor in office, Mr. Nehemiah Grew, resumed and carried on the work. Mr. Oldenburg died at Charleton, near Greenwich, in August, 1678.

OLDENLANDIA, in botany, a genus of the monogynia order, and tetandria class of plants; natural order forty-seventh, stellatæ: the empalement of the flower is permanent, sitting upon the germen: the flower has four oval petals, which spread open, and four stamina, terminated by small summits; it has a roundish germen, situated under the flower, crowned by an indented stigma; the germen afterwards turns to a globular capsule, with two cells filled with small seeds. We have but one species of this plant in the English gardens; but Linnæus enumerates six.

OLDERMAN (John), a learned German, born in Saxony in 1686. He studied at Helmstadt, and became professor of Greek in that university in 1717. He wrote several learned dissertations, 1. *De Imperfectione Sermonis humani*; 2. *De Phraate Fluvio*, &c. He died at Helmstadt in 1723.

OLDHAM (John), an English poet in the seventeenth century, son of a nonconformist minister, was educated under his father, and then sent to Edmund Hall in Oxford. He became usher to the free-school at Croydon in Surry, and was afterwards private tutor for a considerable time. Having saved a little money, he went to London, and became acquainted with Dryden, Rochester, and the wits of his time. He lived mostly with the earl of Kingston at Holme-Pierpoint in Nottinghamshire, where he died of the small-pox in 1683, in his thirtieth year. His works chiefly consist of satires, odes, translations, paraphrases of Horace, &c., elegiac verses, imitations, parodies, familiar epistles, &c.

OLD HEAD, a cape of Ireland, in Cork, Munster, four miles south of Kinsale; it runs far into the sea, and has a light-house. A mile from its extremity was an ancient castle of the lords of Kinsale, built from one side of the isthmus to the other, which defended all the lands towards the head: this place was formerly called Duncearna, and was the old seat of the Irish kings. The isthmus, by the working of the sea, was quite penetrated through, so as to form a stupendous arch, under which boats might pass from one bay to the other. Among the rocks of this coast there are aviaries of good hawks; also sea-eagles, ospreys, &c.

OLD MAN OF THE MOUNTAIN. See ASSASSINS.

OLDYS (William), esq., Norroy king at arms, and an eminent antiquary, was born in 1687. He was a good historian, a correct writer, and well versed in English antiquities. He wrote, 1. *The British Librarian*, 8vo. 1737; 2. *The Life of Sir Walter Raleigh*, prefixed to his History of the World; 3. *Various Lives in Biographia Britannica*. He died in London April 15th, 1761. The following anagram is in one of his MSS. :—

In word and WILL I AM a friend to you,
And one friend OLD is worth a hundred new.

OLEA, in botany, the olive-tree, a genus of the monogynia order, and diandria class of plants: natural order forty-fourth, sepaliæ: cor. quadrifid, with the segments nearly ovate. The fruit is a monospermous plum. There are three species :—

1. *O. Capensis*, the Cape box-leaved olive, rises with shrubby stems, branching numerously from the bottom, six or seven feet high; small, oval, thick, stiff, shining leaves; and at the axillas small clusters of whitish flowers, succeeded by small fruit of inferior value.

2. *O. Europea*, the common olive-tree, rises with upright solid stems, branching numerously on every side, twenty or thirty feet high; spear-shaped, stiff, opposite leaves, two or three inches long, and half an inch or more broad; and at the axillas small clusters of white flowers, succeeded by oval fruit. This species is the principal sort cultivated for its fruit, the varieties of which are numerous, varying in size, color, and quality. It is a native of the southern warm parts of Europe, and is cultivated in great quantities in the south of France, Italy, and Portugal, for the fruit, to make olive oil, which is in great repute, and is transported to all parts, to the great advantage of those countries where the trees grow in the open ground: the green fruit is also in much esteem for pickling. Olive trees are easily propagated by shoots, which, when care has been taken to ingraft them properly, bear fruit in eight or ten years. Those kinds which produce the purest oil, and bear the greatest quantity of fruit, are ingrafted on the stocks of inferior kinds. Different names are given by the French to the varieties of the olive tree; and of these they reckon nineteen, whilst in Florence are cultivated no fewer than thirty-two. Olive shoots are ingrafted when in flower. If the operation has been delayed, and the tree bears fruit, it is thought sufficient to take off a ring of bark, two fingers breadth in extent, above the highest graff. In that case the branches do not decay the first year; they afford nourishment to the fruit, and are not lopped off till the following spring. Olive trees are commonly planted in the form of a quincunx, and in rows at a considerable distance from one another. Between the rows it is usual to plant vines, or to sow some kind of grain. It is observed that olives, like many other fruit trees, bear well only once in two years. The whole art of dressing these trees consists in removing the superfluous wood; for it is remarked that trees loaded with too much wood produce neither so much fruit nor of so good a quality. Their propagation in England is commonly by layers. The laying is performed on the young branches in spring. Give plenty of water all summer, and they will sometimes be rooted and fit for potting off in autumn; but sometimes they require two summers to be rooted effectually. When, however, they are properly rooted, take them off early in autumn, and pot them separately; give water, and place them in the shade till they have taken fresh root; and in October remove them into the green-house, &c. Those you intend to plant in the open ground should be kept in pots, to have occasional shelter of a garden-frame, two

or three years, till they have acquired some size, and are hardened to the full air; then transplant them into a warm border against a wall; mulch their roots in winter, and mat their tops in frosty weather. Olives have an acrid bitter, extremely disagreeable taste: pickled they prove less disagreeable. The Lucca olives, which are smaller than the others, have the weakest taste; the Spanish, or larger, the strongest; the Provence, which are of a middling size, are generally the most esteemed. When olives are intended for preservation they are gathered before they are ripe. The art of preparing them consists in removing their bitterness, in preserving them green, and in impregnating them with a brine of aromatised sea-salt, which gives them an agreeable taste. For this purpose different methods are employed. Formerly they used a mixture of one pound of quicklime with six pounds of newly sifted wood-ashes; but of late, instead of the ashes, they employ nothing but a lye. This softens the olives, makes them more agreeable to the taste, and less hurtful to the constitution. In some parts of Provence, after the olives have lain some time in the brine, they remove them, take out the kernel, and put a caper in its place. These olives they preserve in excellent oil; and, when thus prepared, they strongly stimulate the appetite in winter. Olives perfectly ripe are soft, and of a dark red color. They are then eaten without any preparation, excepting only a seasoning of pepper, salt, and oil; for they are extremely tart, bitter, and corrosive. Great drought, as well as much rain, is extremely injurious to the crop of olives. This fruit is much exposed to the attacks of a worm peculiar to itself, and which injures it so much that, after the olives are gathered, the produce of the oil extracted from them is diminished one half.—The wood of the olive tree is beautifully veined, and has a pretty agreeable smell: it is in great esteem with cabinet-makers, on account of the fine polish which it takes. It is of a resinous nature, and consequently excellent for burning. As the laurel branch is the symbol of glory, so the olive branch covered with leaves has, from the most ancient times, been the emblem of concord, the symbol of friendship and peace. The leaves of olive trees have an astringent quality. Many people use them in making gargles for inflammations of the throat. These plants in this country must be kept principally in pots, for moving to the shelter of a green-house in winter; for they are too tender to prosper in the open ground in this climate, though sometimes they are planted against a warm south wall, and sheltered occasionally from frost in winter by mulching the roots, and matting their tops; whereby they may be preserved, and will sometimes produce fruit for pickling. A very severe winter, however, often kills or greatly injures their young branches; therefore let the principal part be potted in rich earth, and placed among the green-house shrubs, and managed as others of that kind. These trees are often sent over from Italy to the Italian warehouses in London, along with orange trees, &c., where pretty large plants may be purchased reasonably, which should be managed as direct-

ed for orange trees that are imported from the same country. See CITRUS.

OLEAG'INOUS, *adj.* } Lat. *oleaginus*. Oily;
OLEAG'INOUSSNESS, *n. s.* } unctuous.

In speaking of the *oleaginousness* of urinous spirits, I employ the word most rather than all. *Boyle*.

The sap, when it first enters the root, is earthy, watery, poor, and scarce *oleaginous*. *Arbutnot.*

OLEARIUS (Adam), minister to the duke of Holstein, and secretary to the embassy sent in 1633 to the great duke of Muscovy and to the king of Persia. He spent six years in this employment; and, on his return, published a relation of his journeys, with maps and figures, at Sleswick, 1656, in folio. He wrote an Abridgement of the Chronicles of Holstein from 1448 to 1663: and was appointed librarian to the duke of Holstein, in which capacity he probably died. He has the character of an able mathematician, an adept in music, and a good orientalist, especially in the Persian language.

OLEARIUS (Godfrey), son of Godfrey Olearius, D. D., superintendent of Halle in Saxony, was born there in 1639. He became professor of Greek at Leipsic. He discharged the most important posts in the university, and, among other dignities, was ten times rector of it. His learning and industry were displayed in 106 theological disputations, sixty-one in philosophy, some programmas upon difficult points, several speeches and theological councils; which make two thick volumes; besides his Moral Theology, his Introduction to Theology which treats of cases of conscience, and his Hermeneutica Sacra. He died in 1713.

OLEARIUS (Godfrey), eldest son of the above, was a man of genius and learning, a professor in the same university, and published several works; but died young of a consumption before his father.

O'LEARY (Rev. Arthur), an eminent Irish Roman Catholic divine, born at Cork in 1729. He was a Dominican friar, and preached in his friary in Cork for many years. As a public author he ranks high in the literary world. Sir Lucius O'Brien compared him to Ganganelli. He wrote, 1. A Defence of the Divinity of Christ and the Immortality of the Soul (Cork, 1784); in a series of letters to the author of a profane work, entitled Thoughts on Nature and Religion, by Michael Servetus, but which was the impious effusion of a physician in Cork, whom O'Leary exposed to merited contempt. 2. Loyalty Asserted. 3. An Essay on Toleration. 4. Letters to Mr. John Wesley. 5. A Defence of his Conduct and Writings, during the Disturbances in Munster, in answer to Dr. Woodward, bishop of Cloyne, and Mr. Trant, who wrote under the signature of Theophilus; 1781. In this piece, on the topic of purgatory, he recommended a truce, as being a proposition that could neither be demonstratively supported nor disproved; and therefore his lordship should take the thing as he found it, as it is possible 'he may go farther and fare worse.' He was a man of great urbanity of manners: in his writings he was pleasant, humorous, and energetic. He died at London, January 8th, 1802, aged seventy-three.

OLEASTER, *n. s.* Latin *oleaster*. A species of wild olive.

OLEFIANT GAS. See **CHEMISTRY**. Index.

OLEIC ACID. When potash and hog's lard are saponified, the margarate of the alkali separates in the form of a pearly looking solid, while the fluid fat remains in solution, combined with the potash. When the alkali is separated by tartaric acid the oily principle of fat is obtained, which Mr. Chevreul purifies by saponifying it again and again, recovering it two or three times; by which means the whole of the margarine is separated. As this oil has the property of saturating bases, and forming neutral compounds, he has called it oleic acid. In his sixth memoir he gives the following table of results:—

| | | |
|------------------------------|------------|-------|
| 100 Oleic acid of human fat. | | |
| Saturate Barytes. | Strontian. | Lead. |
| 26-00 | 19-41 | 82-48 |
| 100 Oleic acid of sheep fat. | | |
| 26-77 | 19-38 | 81-81 |
| 100 Oleic acid of ox fat. | | |
| 28-93 | 19-41 | 81-81 |
| 100 Oleic acid of goose fat. | | |
| 26-77 | 19-38 | 81-34 |
| 100 Oleic acid of hog fat. | | |
| 27-00 | 29-38 | 81-80 |

Oleic acid is an oily fluid without taste and smell. Its specific gravity is 0-914. It is generally soluble in its own weight of boiling alcohol, of the specific gravity of 0-7952; but some of the varieties are still more soluble. 100 of the oleic acid saturate 16-58 of potash, 10-11 of soda, 7-52 of magnesia, 14-83 of zinc, and 13-93 peroxide of copper.

OLENUS, or **OLEN**, a Greek poet, older than Orpheus, born at Xanthe, a city of Lycia. He composed several hymns, which were sung in the island at Delos upon festival days. Olenus is said to have been one of the founders of the oracle of Delphi; to have been the first who filled at that place the office of priest of Apollo; and to have given responses in verse.

OLEOSE, *adj.* Latin *oleosus*. Oily.

Rain water may be endued with some vegetating or prolific virtue, derived from some saline or *oleose* particles it contains. *Bacon.*

In falcons is a small quantity of gall, the *oleous* parts of the chyle being spent on the fat.

Floyer on the Humours.

OLERON, ISLAND OF, France, on the coast of the Atlantic Ocean, opposite to the mouths of the Sendre and the Charente, at about three miles from the continent. It is eighteen miles long, six broad, and forty-eight in circumference, and forms part of the department of the Lower Charente, making two cantons of the arrondissement of Marennnes. It is fertile in corn, maize, beans, wood, red and white wine, and excellent vegetables. There are here numerous marshes, which furnish a beautifully white salt. This island contains the little towns of Chateau Ile, and St. Pierre d'Oleron, the boroughs of St. Denis, Dolus, St. George's, St. Trojan, and several villages, including a population of about 15,000. It is crossed from south to north, throughout almost its whole extent, by a great road, which terminates at the tower of Chasseron, an elevated lighthouse on the northern extremity

of the island. There are here brandy distilleries and dock-yards; and a considerable trade is carried on in grain, salt, wines, and brandy.

OLERON, SEA LAWS OF, certain laws relative to maritime affairs, made by king Richard I. when he was at the island of Oleron. These laws, being accounted the most excellent sea laws in the world, are recorded in the Black Book of the admiralty; and are the foundation of the maritime laws of most states in Europe. See Selden's *Mare Clausum*. See **MARITIME**.

OLEUM PALMÆ CHRISTI, commonly called castor oil, is extracted from the kernel of the fruit produced by the *Ricinus Americanus*. See **RICINUS**. This oil is much used as a purgative in medicine. It acts gently on the bowels, with little or no irritation. By many physicians it has been deemed a sovereign remedy in bilious, calculous, and nephritic complaints; but its taste is extremely nauseous, and, when frequently used, it is apt to relax the tone of the bowels. It is recommended to be given in clysters; and Dr. Canvane of Bath affirms, that when children cannot be made to swallow any medicine, if the navel and hypochondria be rubbed with this oil, it will produce one or two physical stools. He adds that in small draughts, or by clyster, or by embrocation, it is an excellent vermifuge.

OLFACT, *v. a.* } Latin *olfactus*. To smell;

OLFACTORY, *adj.* } used only, as we find, in burlesque: olfactory, having or pertaining to the sense of smell.

There is a Machiavelian plot,

Tho' every nare olfact it not. *Hudibras.*

EFFLUVIA, or invisible particles that come from bodies at a distance, immediately affect the olfactory nerves. *Locke.*

OLGA, the queen of Igor, the second monarch of Russia, who flourished about A. D. 880, having succeeded his father Ruric, who died in 878. Olga was born in Plescow, and was of the best family in that city. She bore him one son, called Swetoflaw. Igor being murdered by the Drewenses, or Drewliani, Olga revenged his death. She went afterwards to Constantinople, where she was baptised by the name of Helena. The emperor, John Zimisces, was her god-father, and fell in love with her; but she, alleging their spiritual alliance, refused to marry him. Her example made some impression upon her subjects, many of whom became converts to Christianity; but none upon her son, who reigned for a long time after her death, which happened at Pereslaw, in the eightieth year of her age, fourteen years after her baptism. The Russians rank her among their saints, and keep her festival on the 11th of July.

OLIBANUM, in pharmacy, a gummy resin, the product of the juniperus lycia Linnæi, brought from Turkey and the East Indies, usually in drops or tears like those of mastich, but larger; of a pale yellowish, and sometimes reddish color; a moderately warm pungent taste, and a strong, not very agreeable smell. This drug has received many different appellations, according to its different appearances; the single tears are called simply olibanum, or thus; when two are joined together, they have been called thus masculum, and, when very large,

thus *fœmininum*: sometimes four or five, about the bigness of filberts, are found adhering to a piece of the bark of the tree from which they exuded; these have been named thus *corticolum*; the finer powder which rubs off from the tears in the carriage, mica-thuris; and the coarser powder, manna thuris. This drug is not however, in any of its states, what is now called thus or frankincense in the shops. *Olibanum* consists of about equal parts of a gummy and resinous substance; the first soluble in water, the other in rectified spirit. With regard to its virtues, abundance have been attributed to it, particularly in disorders of the head and breast, in hæmoptoes, and in alvine and uterine fluxes: but its real effects in these cases are far from answering the promises of the recommenders. Riverius is said to have had large experience of the good effects of this drug in pleurisies, especially epidemic ones; he directs a scooped apple to be filled with a dram of *olibanum*, then covered and roasted under the ashes; this is to be taken for a dose, three ounces of *carduus* water after it, and the patient covered up warm in bed; in a short time, he says, either a plentiful sweat, or a gentle diarrhoea ensues, which carries off the disease. Geoffroy says, that he has frequently made use of this medicine after venesection, with good success.

OLID, adj. } Lat. *olidus*. Unsavory of
OLIDOUS. } smell; stinking; fœtid.

In a civet cat a different and offensive odour proceeds, partly from its food, that being especially fish, whereof this humour may be a garous excretion and *olideous* separation. *Brown.*

The fixt salt would have been not unlike that of men's urine; of which *olid* and despicable liquor I chose to make an instance, because chemists are not wont to take care for extracting the fixt salt of it. *Boyle.*

OLIFANT'S RIVER, a fine river of the district of Drakenstein, in the settlement of the Cape of Good Hope, falling into the Atlantic 200 miles north of Cape Town. The fertile valley through which it flows, between the ranges of the Bokkeveld, forms one of the divisions of Stellenbosch.

OLIGARCHY, n. s. Gr. *ολιγαρχία*. Government by a few persons; aristocracy.

The worst kind of *oligarchy* is, when men are governed indeed by a few, and yet are not taught to know what those few be whom they should obey. *Sidney.*

We have no aristocracies but in contemplation; all *oligarchies*, wherein a few men domineer, do what they list. *Burton.*

After the expedition into Sicily, the Athenians chose four hundred men for administration of affairs, who became a body of tyrants, and were called an *oligarchy*, or tyranny of the few; under which hateful denomination they were soon after deposed. *Swift.*

OLIO, n. s. Span. and Ital. *olla*. See **OGLIO**. A mixture or medley.

Ben Jonson, in his *Sejanus* and *Catiline*, has given us this *olio* of a play, this unnatural mixture of comedy and tragedy. *Dryden.*

I am in a very chaos to think I should so forget myself. But I have such an *olio* of affairs, I know not what to do. *Congreve.*

OLITORY, n. s. Lat. *olitor*. Pertaining to the kitchen garden.

Gather your *olitory* seeds. *Evelyn's Calendar.*

OLIVA (Alexander), a celebrated cardinal, and general of the Austin monks, was born at Saxoferato in 1408. He was admitted young among the Augustines, and studied at Rimini, Bologna, and Perugia; in which last university he was appointed professor of philosophy and divinity. He was successively chosen provincial, solicitor-general, vicar, and general of his order; and in 1460 was appointed a cardinal and bishop of Camerino by Pius II. He published, 1. *De Christi Ortu Sermones Centum*. 2. *De Cœna cum Apostolis Facta*. 3. *De Peccato in Spiritum Sanctum*. 4. *Orationes Elegantes*. He died at Tivoli in 1463.

OLIVA (John), a learned Italian, professor of morality at Azalo. He was patronised by Clement XI., and wrote some pieces, but his works are not interesting.

OLIVA, a sea-port town of Pomerania, on a bay of the Baltic; with a monastery; famous for a peace concluded in it between the emperor and the kings of Sweden and Poland in 1660. It is three miles, says Dr. Brookes, ten, says Mr. Crutwell, west of Dantzic. Long. 18° 29' E., lat. 54° 99' N.

OLIVA, a town of Spain, in Valencia.

OLIVARES, or **OLIVAREZ**, a town of Spain in Old Castile; eighteen miles south-east of Valladolid.

OLIVAREZ (Gasper de Guzman, count de), favorite and minister to Philip IV. of Spain; a man of great talents and boundless ambition. Philip no sooner became king than he became the subject of this his favorite. The king had abilities, but, whilst he spent his time in inactivity, the whole government was under the direction of Olivarez. The count, on the most plausible pretences, removed all such as he thought stood in his way, even to death, of which don Rodrigo Calderona was a melancholy instance, which excited universal compassion. By his imprudent conduct he provoked the resentment of the most powerful states, particularly England, France, and Holland, to conspire against Spain. Olivarez, however, never lost his credit; for, though Spain was put to the severest trials, it acquired a degree of fame which in the general opinion overbalanced its losses. Olivarez too was fortunate in making the peace; wherein he gained considerable advantage over Richelieu, so that things appeared to be still in a favorable train. But, in 1627, he again drew Spain into a war with Mantua, contrary to the sentiments of the wisest politicians; from which is justly dated its declension. He endeavoured to break the alliances of the duke of Mantua by various stratagems; but they did not succeed. He had soon after this another cause of mortification, on Richelieu (whom he considered as his enemy) being created a duke and peer of France, and admitted among the Venetian nobility. The people at length began to be displeased with his conduct; which in many instances was cruel and detestable. Spain, however, was so unusually successful, that the faults of the minister were overlooked for the

time; which rendered him more insolent and obstinate than ever. He had set his heart on the reduction of Casal in Italy, but the Spanish army was totally defeated. The revolt of the Catalans, whom he wished to deprive of their privileges, was the next consequence of his folly: he employed the Marquis de los Velez to quell this rebellion; but the cruelty of the measures used for this purpose only inflamed it the more. The revolution of Portugal, another disastrous event, was also the result of his obstinacy and rigor. The great secret, by which Olivarez had governed his master, was being the confidant of his pleasures. While he assumed a specious appearance of religion, he was not only immersed in vice himself, but encouraged it in his prince. Among other mistresses, he procured for him the fair actress Calderona. By this woman he had a son, named Don Juan of Austria, whom in the fourteenth year of his age he appointed generalissimo of the army against Portugal; while the heir apparent to the crown, Don Balthasar, was left under the tuition or custody of the countess of Olivarez; at which conduct the queen was chagrined, and the people enraged. His schemes now began to be defeated every where, and he fell under the displeasure of the emperor, the grandees, and the people all at once. His ill fortune did not, however, wholly overpower him; he was obliged to conceal himself, to avoid the rage of the populace; but he had still the confidence to publish an Apology for his conduct, which possessed a considerable share of wit and humor, tempered with spirited and masterly reasoning. This, however, did not prevent his being banished to Toro, where, worn out by infirmities, he died in 1645.

OLIVASTER, *adj.* Fr. *olivastre*. Darkly brown; tawny.

The countries of the Abyssenes, Barbary, and Peru, where they are tawny, *olivaster*, and pale, are generally more sandy. *Bacon*.

OLIVE, *n. s.* Fr. *olive*; Ital. *uliva*; Latin *olea*, *olea*. A tree yielding oil; the fruit of the tree; an ancient emblem of peace.

The seventh year thou shalt let it rest. In like manner thou shalt deal with thy vineyard, and olive yard. *Exod. s. xxiii. 11.*

To thee the heavens, in thy nativity,
Adjudget an olive branch and laurel crown,
As likely to be blest in peace and war.

Shakespeare.

In the purlieus of this forest stands

A sheepcote fenced about with olive trees. *Id.*

Their olive-bearing town. *Dryden's Æneid.*

It is laid out into a grove, a vineyard, and an allotment for olives and herbs. *Broomes.*

'The leaves are for the most part oblong and evergreen; the flower consists of one leaf, the lower part of which is hollowed, but the upper part is divided into four parts; the ovary, which is fixed in the centre of the flower cup becomes an oval, soft, pulpy fruit, abounding with a fat liquor, inclosing a hard rough stone.'

Miller.

OLIVE, in botany. See **OLEA**.

OLIVE, **WILD**. See **ELÆAGNUS**.

OLIVE OIL. The oil is undoubtedly that part of the produce of olive trees which is of greatest value. The quality of it depends on the nature

of the soil where the trees grow, on the kind of olive from which it is expressed, on the care which is taken in the gathering and pressing of the fruit, and likewise on the separation of the part to be extracted. Unripe olives give an intolerable bitterness to the oil; when they are over ripe the oil has an unguinous taste: it is therefore of importance to choose the true point of maturity. When the situation is favorable, those species of olives are cultivated which yield fine oils; otherwise they cultivate such species of trees as bear a great quantity of fruit, and they extract oil from it for the use of soaperies, and for lamps. They gather the olives about November or December. It is best to put them as soon as possible into baskets, or into bags made of wool or hair, and to press them immediately, to extract a fine oil. Those who make oil only for soaperies let them remain in heaps for some time in their storehouses; when afterwards pressed, they yield a much greater quantity of oil. Those, even, who extract oil to be used in food sometimes allow them to ferment in heaps, that they may have more oil; but this is extremely hurtful to the quality of the oil, and is the reason why fine oil is so very rare. M. Duhamel recommends not to mix sound olives with those in which a fermentation has already begun, the oil which is extracted being then of a bad quality and unfit for preservation. To have the oil in its purity, we must allow it to deposit its sediment, and then pour it off into another vessel. The oil extracted from the pulp only of olives is the most perfect which can be obtained, and will keep for several years; but that which is extracted from the kernel only, or from the nut, or from the whole olive, ground in the common way in public mills, has always more or fewer defects, loses its limpidity in a certain time, and is very apt to become rancid. Care must be taken likewise to keep it in proper vessels well shut. After all, in the course of time, olive oil loses its qualities, becomes disagreeable to the taste and smell, diminishes in fluidity, and at length thickens considerably. The refuse of the first pressing, when squeezed a second time, yields an oil, but thicker and less pure than the former. What remains after the second pressing, when mixed with a little water and placed in a pan over the fire, produces by pressure a third oil, but of a very inferior quality. What remains after all the oil is expressed is termed grignon, and is of no farther use but as fuel. The sediment, or fæces, of new oil we name, after the ancients, *amurca*; it is an excellent remedy in rheumatic affections. In Paris the wax used for shoes is commonly made of the dregs of defecated oil and smoke-black. Oil of olives is an ingredient in the composition of many balsams, ointments, plasters, mollifying and relaxing liniments. It is of an emollient and solvent nature; mitigates gripes, and the pains accompanying dysentery; and is one of the best remedies when one has chanced to swallow corrosive poisons: but it by no means prevents the fatal accidents which ensue from the bite of a snake, as has been pretended. It is an effectual cure, M. Bourgeois tells us, for the stings of wasps, bees, and other insects. A bandage soaked in the oil is immediately applied

to the sting, and a cure is obtained without inflammation or swelling. Olive oil is of no use in painting, because it never dries completely. The best soap is made of it, mixed with Alicante salt-wort and quick-lime.

OLIVE (Peter John), a French monk, was born in 1247, and died in 1297, aged fifty. After his death his body was dug up, and he was condemned as a heretic, for having advanced, in his writings, 'that the pope was the mystical antichrist; that St. Francis was the angel in the Revelations said to have the mark of the living God, and that his rule was the true gospel; that the perfect state of the church began with St. Francis; and that Christ and his apostles had no property, either in common or particular, but only the usufruct of what they enjoyed.'

OLIVENZA, or OLIVENÇA, a fortified town in the west of Spain, on the frontier of Estremadura, situated in a plain on a small river of this name, which falls into the Guadiana, nine miles north-east of the town, which belonged to Portugal until ceded to Spain at the treaty of Badajoz, in 1801. The congress of Vienna, in 1815, recommended its restoration, but without effect. The number of inhabitants is 4500. Fifteen miles south-east of Elvas, and forty-two south of Evora.

OLIVER (Isaac), an English painter, born in 1556, eminent both for history and portraits. Several of his miniatures are in the collections of our nobility and gentry. His drawings are finished to an extraordinary degree of perfection: many being copies after Parmegiano. Rubens and Vanduyck painted James I. after a miniature of Oliver's. He died in 1617.

OLIVER (Peter), the son and disciple of Isaac, was born in 1601. He arrived at a degree of perfection, in miniature portraits, superior to his father and all his contemporaries. In the collections of Charles I. and James II. there were thirteen historical subjects painted by this Oliver, of which seven are still preserved in the closet of queen Caroline at Kensington. He died in 1660.

OLIVER, a learned English Benedictine monk, born at Malmesbury, in the eleventh century. He invented artificial wings, but in attempting to fly with them from a high tower he fell and broke his leg. He died A.D. 1060.

OLIVER (William), M. D., an eminent English physician, who practised with success many years at Bath, and wrote a Treatise on the Virtues of the Bath Waters. He assisted the celebrated Nash in procuring the establishment of the Bath Hospital. He was during the greater part of his life a zealous infidel, but a short time before his death became a penitential convert to Christianity. He died in 1764.

OLIVER CROMWELL. See CROMWELL.

OLIVES, MOUNT OF. See OLIVET.

OLIVET, or MOUNT OF OLIVES, in ancient geography, was seated to the east of Jerusalem, and parted from it only by the brook Kedron and the valley of Jehoshaphat, which stretches out from north to south. It was upon this mount that Solomon, in his dotage, built temples to the gods of the Ammonites (1 Kings xi. 7), and of the Moabites, out of complaisance to his wives,

who were natives of these nations. Hence Mount Olivet is called the mountain of corruption (2 Kings xxiii. 13). Josephus says that this mountain is at the distance of five stadia or furlongs from Jerusalem, which make 625 geometrical paces, or the length of a Sabbath day's journey, says St. Luke (Acts i. 12). It had three summits, or was composed of three several mountains, ranged from north to south. The middle summit is said to be that whence our Saviour ascended into heaven. It was upon that towards the south that Solomon built temples to his idols. The summit which is most to the north is distant two furlongs from the middlemost. This is the highest of the three, and is commonly called Galilee. In the time of king Uzziah the mount of Olives was so shattered by an earthquake that half of the earth on the west fell down, and rolled four furlongs or 500 paces thence, towards the mountain which was opposite to it on the east, so that the earth blocked up the highways, and covered the king's gardens.

OLIVET (Joseph), a learned French writer, born in 1682. He entered early into the society of the Jesuits, but left it in 1715. He then went to Paris, where he became so eminent in literature that he was chosen a member of the French Academy. He published an excellent edition of Cicero's works in 9 vols. 4to. He wrote also *Histoire de l'Academie Françoise*, and several other works. He died in 1678.

OLIVETAN (Robert), a printer, related to Calvin, who printed at Neufchatel in 1535, in folio, a version of the Bible in French, the first which had been translated from the original Hebrew and Greek. It is written in an uncouth and barbarous style, and is far from being faithful. The characters in which it is printed are Gothic, and the language is no less so. It is valued only on account of its rarity and age. Olivetan survived his publication but a short time; for he was poisoned at Rome the year after, of which his translation is alleged to have been the cause. Olivetan's Bible, revised by John Calvin and N. Malingier, was reprinted at Geneva, in 1540, in 4to. This edition is still rarer than the former. It is called the Bible de l'Épée, because the printer had a sword in his sign.

OLIVEYRA (Francis Xavier de), a Portuguese knight of the order of Christ, was born at Lisbon in 1702, and at the age of fourteen admitted into a public office. In 1732 he went to Madrid, where his uncle held a diplomatic situation, and presented him to the king of Spain. He shortly after succeeded his father as secretary of embassy at Vienna; but having had a dispute with the count de Taronca, the ambassador, resigned his employment, and went to Holland in 1740. At Vienna the Lutherans had excited in his mind suspicions of the soundness of his Catholic faith, which he shows in *Memoirs of his Travels and Familiar Letters*, published in 1741 and 1742. These works were accordingly censured by the inquisition; while the author, having removed to England, made in 1746 an open profession of Protestantism. Here he published a *Pathetic Discourse* to his countrymen, on the

earthquake at Lisbon, and the following year a second discourse. In September 1762, being declared a heretic at an Auto-da-Fé, he was burnt in effigy, on which he published a book entitled *The Chevalier d'Oliveyra burnt in Effigy as a Heretic, why and wherefore? Anecdotes and Reflections on the subject laid before the Public by himself*. He died at Hackney in 1783, having written, besides the pieces above mentioned, a great number of MSS., including Oliveyriana, or Memoirs, historical and literary, 27 vols. 4to.

OLIVIER (Claude Matthew), advocate of the parliament of Aix, was born at Marseilles in 1701, and appeared at the bar with éclat. He had a chief hand in the establishment of the Academy of Marseilles, and was one of its original members. He possessed a quick and lively genius. He died in 1736, at the age of thirty-five. He published 1. *L'Histoire de Philippe roi de Macedoine, et pere d' Alexandre le Grand*, 2 vols. 12mo. 2. *Memoire sur les secours donnés aux Romains, par les Marseillois, pendant la 2de Guerre Punique*. 3. *Memoire sur les secours donnés aux Romains, par les Marseillois, durant la Guerre contre les Gaulois*.

OLIVIER (Guillaume Antoine), M. D., a modern French naturalist and traveller, was born near Frejus in 1756, and studied at Montpellier, where he received his diploma at the age of seventeen. Botany and entomology were his favorite pursuits: at the age of twenty-three he went to Paris to assist in the composition of a work on the natural history of that district. He was afterwards sent into England and Holland, to collect materials for a history of insects; and was employed on the entomological part of the *Encyclopedie Méthodique*. At the period of the revolution Olivier travelled to Persia with M. Bruguières, on a diplomatic mission planned by the minister Roland, whose death deprived the envoys of all their financial resources. Olivier returned to Paris, December, 1798, after an absence of six years, during which he visited Egypt, Greece, Turkey, Arabia, Persia. He brought home valuable collections in natural history, of which he published an account in his *Voyage dans l'Empire Ottoman, l'Egypte, et la Perse*, 3 vols. 4to., with plates. He died suddenly at Lyons, in 1814.

OLMEDO, a decayed town in the interior of Spain, and province of Valladolid, on the river Adagia. It was formerly large, and its walls are still of considerable extent; but it has now only 2000 inhabitants. Twenty miles south of Valladolid.

OLMETO, a town in the island of Corsica, with 1600 inhabitants. Nine miles south-west of Bastia.

OLMUTZ, a circle of the Austrian province of Moravia, comprising the north corner of the country adjoining to Glatz. Its area is 2020 square miles. The south part is level and fertile; the north hilly, enclosing a part of the Schneegebirge range of mountains. This circle is watered by the March, running from north to south, and contains several iron mines, an alum-work, large manufactures of woollen, linen, and linen-yarn; cotton-works, paper-mills, and glass-houses. The castle is strong, and has often

served as a state prison; eighty miles N. N. E. of Vienna. Population 347,300.

OLMUTZ, or HOLOMAUTZ, a town of Moravia, formerly the capital of the province, now only the chief town of the above circle, stands on the river March, and is strongly fortified, but the houses, though substantial, are high and gloomy, raised for the most part on square buttresses, with piazzas. The university was removed to Brunn in 1778, and its place is now supplied by a lyceum. Olmutz was long a bishop's see: this was raised to an archbishopric in 1777, and is one of the richest benefices of the empire. The principal public buildings are the hospital for lying-in women and orphans; the cathedral, in that part of the city called the Dom; a board for the management of the affairs of widows and minors; the riding academy; and an extensive public library. Olmutz has several tanneries and manufactories. One of its principal branches of trade is the sale of cattle from the south-west of Russia and Moldavia. This town was besieged in 1758 by Frederick II., but his efforts were baffled by the garrison, and the manoeuvres of marshal Daun. Population 11,000. 130 miles east by south of Prague, and 100 N. N. E. of Vienna.

OLNEY, or OULNEY, a market town and parish of Bucks, situate on the Ouse, five miles north from Newport Pagnell, and fifty-five from London. This town consists of one long street, and has long been noted for its manufacture of bone lace. The church has a beautiful spire, the only one in the county. Market day, Monday.

OLOCENTROS, in natural history, a name given by the Greeks to a small animal of the spider kind, whose bite was accounted mortal. It is the same with the solipuga, so called from its stinging or biting most violently in places or seasons where the sun had the most power, as Africa, &c. The name solifuga was a corrupt way of writing that word; and olocentros seems also a false way of writing heliocentros, which signifies the same as solipuga.

OLONETZ, an extensive government of European Russia, lying to the south of that Archangel, and to the east of Finland, between 29° 40' and 40° 20' of E. long., and 59° 40' and 65° 38' of N. lat. Its area (being equal to that of Great Britain) is 87,500 square miles: its population not more than 282,000, partly Russians, and partly Finns and Laplanders. The most remarkable rivers are the Onega, the Wug, the Kem, the Svir, the Schuja, the Vutegra, and the Vodlo. Of the lakes, by far the largest, those of Ladoga and Onega. This province has a range of low mountains in the north, extending southward from Scandinavia, called Mons Alaiunus. The rest is level; but the soil is universally poor, and but partially productive, the valleys being marshy, and the plains sandy. The climate is severe, particularly in the north, where little is produced besides moss and a few low shrubs and trees. These disadvantages prevent corn from being much cultivated, and necessitate a large annual import. There are forests on the southern mountains, and on the islands in the lake Onega, the timber of which, with the iron, marble, and vitriol of the mines, form the chief exports. Game and fish are abundant, and the

latter is exported in large quantities. The province is divided into seven circles; Petrozavodsk is the capital.

OLONETZ, a town of European Russia, in the government of the same name, eighty-four miles north-east of St. Petersburg, and 140 south of Petrozavodsk, on the river Olonza, near the lake Ladoga. It has a communication by water with St. Petersburg, and is remarkable as being the place where the first dock-yard was erected by Peter the Great. Ship-building is still carried on here. Inhabitants 2800. Long. 32° 58' E., lat. 60° 23' N.

OLOOT, a considerable manufacturing town of Catalonia, Spain, on the river Fluvia, twenty miles W. N. W. of Gerona. It has seven squares, great and small, three churches, two monasteries, and a large hospital. The manufactures are silk, woollen, and cotton stockings; raseens, serges, and coarse woollen stuffs; cottons, cotton yarn, leather, and soap. Inhabitants 15,000.

OLYMPIA, or **OLYMPIA PISATIS** according to Strabo, in ancient geography, a town of Elis, celebrated for a temple of Jupiter Olympius, before which stood a grove of wild olive trees, in which was the stadium or foot course, so called because the eighth part of a mile; and by which the Alpheus runs. Olympia was famous also for a temple of Juno, sixty-three feet long, with columns round it of the Doric order; and a Metroum or temple to the mother of the gods, a large Doric edifice, with holy treasures. These and the porticoes, a gymnasium, prytaneum, and many more public buildings, with the houses of the priests and other inhabitants, made Olympia a considerable place. The stadium was in the grove before the great temple; and near it was the hippodrome, or course for horse and chariot races. The temple of Jupiter was of the Doric order, sixty-eight feet high to the pediment, ninety-five wide, and 230 long; the cell encompassed with columns. It was erected with the country stone; the roof of Pentelic marble; the slabs disposed as tiles; the way to it up a winding staircase. The two pediments were enriched with sculpture; and one had over the centre a statue of Victory gilded, and underneath a votive buckler of gold. At each corner was a gilded vase. Above the columns were fixed twenty-one gilded bucklers, offered, at the conclusion of the Achaean war, by the Roman general Mummius. The gates of the two fronts were of brass, and over them were carved the labors of Hercules. Within the cell were double colonnades, between which was the approach to the image. The Jupiter of Olympia immortalised its maker Phidias. It was of ivory and gold, the head crowned with olive. In the right hand was a statue of Victory; in the left a flowered sceptre, composed of various metals, on which was an eagle. The sandals were of gold, as also the vestment, which was curiously embossed with lilies and animals. The throne was gold inlaid with ebony and ivory, and studded with jewels, intermixed with paintings and exquisite figures in relief. The pillars between the feet contributed to its support. Before it were walls, serving as a fence, decorated principally with the exploits of Hercules; the portion opposite to the door of a blue color. It was the office of a family descended

from Phidias, called phædruntæ, or the polishers, to keep the work bright and clean. The veil or curtain was cloth rich with the purple dye of Phœnicia, and with Assyrian embroidery, an offering of king Antiochus, and was let down from above by strings. The image appeared higher and broader than it measured. Its magnitude was such that, though the temple was very large, the artist seemed to have erred in the proportions. The god sitting nearly touched the ceiling with his head. A part of the pavement before it was of black marble, enclosed in a rim of Parian or white, where they poured oil to preserve the ivory. The altar of Jupiter Olympius was of great antiquity, and covered with ashes from the thighs of the victims, which were carried up and consumed on the top with wood of the white poplar tree. The ashes also of the prytaneum, in which a perpetual fire was kept on a hearth, were removed annually on a fixed day, and spread on it, being first mingled with water from the Alpheus. The cement was made with that fluid only; and therefore this river was esteemed the most friendly of any to the god. On each side of the altar were stone steps. Its height was twenty-two feet. Girls and women were allowed to ascend the basement, which was 125 feet in circumference. The people of Elis sacrificed daily, and private persons as often as they chose. Many deities were worshipped besides Jupiter. Pausanias has enumerated above sixty altars of various shapes and kinds. One of the unknown gods stood by the great altar. The people of Elis offered on all these monthly; laying on them boughs of olive, burning incense, and wheat mixed with honey; and pouring libations of such liquors as the ritual prescribed. At the latter ceremony sometimes a form of prayer was used, and they sung hymns composed in the Doric dialect. Olympia was situated on an eminence, between two mountains called Ossa and Olympus. Though its ancient splendor is gone, the place reminds the traveller of what it once was. It is in the Morea, and is now a small place, called Langanico, fifty miles south of Lepanto. Long. 22° 0' E., lat 37° 40' N.

OLYMPIA MALDACHINI (Donna), a woman of a very uncommon character. She flourished about the middle of the seventeenth century. She was sister-in-law to Pope Innocent X., and acquired an unlimited power over this vain and weak ecclesiastic. Her avarice and ambition were unbounded: she disposed of all benefices, which were kept vacant till she informed herself of their value: she rated an office of 1000 crowns for three years at one year's revenue, and if for life at twelve year's purchase, one half of which she required to be paid in advance: she gave audience upon public affairs, enacted new laws, and sat in council with Innocent, with bundles of memorials in her hands. It was said that they lived together in a criminal correspondence. On the election of pope Alexander VII. a number of memorials were sent in against her, and he banished her from Rome, and began to examine witnesses respecting her conduct. She was cut off, however, before the trial was finished, by the plague in 1636. Her immense property was not confiscated; the pope only reserving for his own relations about 1 000 000 of crowns.

OLYMPIAD, OLYMPIAS, the space of four years, whereby the Greeks reckoned time. The first Olympiad fell, according to the most accurate and learned computations, exactly 776 years before the first year of Christ, or 775 before that of his birth, in the year of the Julian period 3938, and twenty-two years before the building of Rome. The games were exhibited at the time of the full moon next after the summer solstice; therefore the Olympiads were of unequal length, because the time of the full moon differs eleven days every year, and for that reason they sometimes began the next day after the solstice, and at other times four weeks after. The computation by Olympiads ceased, as some suppose, after the 364th, in the year 440 of the Christian era. It was universally adopted, not only by the Greeks, but by many of the neighbouring countries; though still the Pythian games served as an epoch to the people of Delphi and to the Bœotians; the Nemean games to the Argives and Arcadians; and the Isthmian to the Corinthians and the inhabitants of the Peloponnesian isthmus. To the Olympiads history is much indebted. They have served to fix the time of many momentous events; and, indeed, before this method of computing time was observed, the history of Greece is mostly fabulous, and filled with obscurity, contradiction, and anachronism.

OLYMPIAS, a celebrated princess, daughter of Alexander I. king of Epirus, who married Philip II. king of Macedonia, by whom she had Alexander the Great. Her haughtiness, and probably her infidelity, obliged Philip to repudiate her, and to marry Cleopatra, the niece of king Attalus. Olympias and Alexander showed their disapprobation of this measure, by retiring from court. The murder of Philip soon followed (see **MACEON**) which some attribute to the intrigues of Olympias, who paid the greatest honor to her husband's murderer. She gathered his mangled limbs, placed a crown of gold on his head, and laid his ashes near those of Philip. The admiration of Alexander was in some instances offensive to Olympias; but, when the ambition of her son was concerned, she declared publicly that Alexander was not the son of Philip, but the offspring of Jupiter, who, in the form of an enormous serpent, had introduced himself into her bed. When Alexander was dead, Olympias seized the government of Macedonia; and, to establish her usurpation, she cruelly put to death Aridæus, with his wife Eurydice; Nicanor, the brother of Cassander, with 100 leading men of Macedon, who were inimical to her interest. These barbarities did not long remain unpunished: Cassander besieged her in Pydna, where she had retired with the remains of her family, and she surrendered after an obstinate siege. The conqueror ordered her to be put to death. A body of 200 soldiers were ordered to put the bloody commands into execution, but the splendor and majesty of the queen disarmed their courage. She was at last massacred by those whom she had cruelly deprived of their children, about A. A. C. 316. See **MACEON**.

OLYMPIC GAMES, solemn games among the ancient Greeks, so called from Jupiter Olympus, to whom they were dedicated and said to

have been first instituted by him, after his victory over the sons of Titan: others ascribe their institution to Hercules, the son of Alcmena; others to a Hercules of much greater antiquity; others to Pelops. But, by whomsoever they were instituted, at a period rather early they had fallen into disuse. The wars which prevailed among the Greeks had totally interrupted the religious ceremonies and exhibitions with which they had been accustomed to honor their common gods and heroes; but the Olympic games were restored by Iphitus, a descendant of Oxy-lus, to whom the province of Eleia had fallen in the general partition of the peninsula. The festival, which lasted five days, began and ended with a sacrifice to Olympian Jove. The intermediate time was chiefly filled up by the gymnastic exercises, in which all freemen of Grecian extraction were invited to contend, provided they had been born in lawful wedlock, and had lived untainted by any infamous immoral stain. The preparation for this part of the entertainment was made in the gymnasium of Elis, a spacious edifice, surrounded by a double range of pillars, with an open area in the middle. Adjoining were various apartments, containing baths and other conveniences for the combatants. The neighbouring country was adorned with porticoes, shady walks and groves, interspersed with seats and benches; the whole originally destined to relieve the fatigues and anxiety of the candidates for Olympic fame; and frequented in later times by sophists and philosophers, who were fond to contemplate wisdom, and communicate knowledge, in those delightful retreats. The order of the athletic exercises or combats was established by Lycurgus, and corresponded almost exactly to that described by Homer, in the twenty-third book of the Iliad, and eighth of the Odyssey. Iphitus appointed the other ceremonies and entertainments; settled the regular return of the festival at the end of every fourth year, in July; and gave to the whole solemnity that form and arrangement which it preserved with little variation above 1000 years; a period exceeding the duration of the most famous kingdoms and republics of antiquity. Among the benefactors of Olympia, at a much later period, was reckoned Herod, afterwards king of Judea. Seeing, on his way to Rome, the games neglected or dwindling into insignificance, from the poverty of the Eleans, he displayed a vast munificence as president, and provided an ample revenue for their future support and dignity. The care and management of the Olympics belonged for the most part to the Eleans; who on that account enjoyed their possessions without molestation, or fear of war or violence. They appointed a certain number of judges, who were to take care that those who offered themselves as competitors should perform their preparatory exercises; and these judges, during the solemnity, sat naked, having before them a crown of victory, formed of wild olive, which was presented to whomsoever they adjudged it. Those who were conquerors were called Olympionices, and were loaded with honors by their countrymen. At these games women were not allowed to be present; and if

any woman was found, during the solemnity, to have passed the river Alpheus, she was to be thrown headlong from a rock. This, however, was sometimes neglected; for we find not only women present at the celebration, but also some among the combatants, and some rewarded with the crown. The preparations for these festivals were great. No person was permitted to enter the lists, if he had not regularly exercised himself ten months before the celebration at the public gymnasium of Elis. No unfair dealings were allowed; whoever attempted to bribe his adversary was subjected to a severe fine; and even the father and relations were obliged to swear that they would have recourse to no artifice which might decide the victory in favor of their friends. No criminals, nor such as were connected with impious and guilty persons, were suffered to present themselves as combatants. The wrestlers were appointed by lot. Some little balls superscribed with a letter were thrown into a silver urn, and such as drew the same letter were obliged to contend one with the other. He who had an odd letter remained the last; and he often had the advantage, as he was to encounter the last who had obtained the superiority over his adversary. In these games were exhibited running, leaping, wrestling, boxing, and throwing the quoit, all which together were called *πενταθλον*, or *quinqertium*. There were also horse and chariot races, and contentions in poetry, eloquence, and the fine arts. The only reward that the conqueror obtained was a crown of olive. This, as some suppose, was in memory of the labors of Hercules, which were accomplished for the universal good of mankind, and for which the hero claimed no other reward but the consciousness of having been the friend of mankind. So small and trifling a reward stimulated courage and virtue, and was the source of greater honors than the most unbounded treasures. The statues of the Olympionicæ were erected at Olympia in the sacred wood of Jupiter. Their return home was that of a warlike conqueror; they were drawn in a chariot by four horses, and every where received with the greatest acclamations. Their entrance into their native city was not through the gates; to make it more grand and more solemn, a breach was made in the walls. Painters and poets were employed in celebrating their names; and indeed the victories severally obtained at Olympia are the subjects of the most beautiful odes of Pindar. The combatants were naked. A scarf was originally tied round their waist; but when it had entangled one of them, and been the cause that he lost the victory, it was laid aside. The Olympic games were observed every fifth year, or, to speak with greater exactness, after a revolution of four years, and in the first month of the fifth year; and they continued for five successive days. As they were the most ancient and most solemn of all the festivals of the Greeks, it will not appear wonderful that they drew so many people, not only inhabitants of Greece, but of the neighbouring islands and countries.

OLYMPIODORUS, a peripatetic philosopher of Egypt, born in Thebes, who flourished under Theodosius II., and wrote a history of the

eastern empire in Greek, in twenty-two books, from the seventh consulship of Honorius, and second of Theodosius, to the accession of Valentinian I. He wrote also, 2. A History of an Embassy to some of the Barbarous Nations of the North; 3. Commentaries on the Meteors of Aristotle, published by Aldus in 1550, folio; and 4. A Life of Plato.

OLYMPUS, a celebrated mountain of Macedonia and Thessaly, now called Lacha. The ancients supposed it to be the highest mountain in the world; that its top reached heaven; was the court of Jupiter, and the residence of the gods; and the poets feigned that upon it there were neither clouds, rain, nor wind, but an eternal spring.—Homer, *Iliad* 1. Virg. *Æn.* ii. vi. Ovid, *Met.* Lucan, Claudian, &c. It was also fabled to have been the scene of the battle between the gods and the giants. Its real height is about 6000 feet perpendicular; its top is always covered with snow.

OLYNTIANS, the inhabitants of Olynthus; a brave people, who, being betrayed by the Athenians, were conquered and sold for slaves by Philip II. See MACEDON.

OLYNTHUS, a celebrated city and republic of Macedon, on the isthmus of the peninsula of Pallene, once very flourishing, and able to dispute with Athens and Sparta. It was at last destroyed by Philip II. of Macedon.

OLYRA, in botany, a genus of the triandria order, and monocæia class of plants: natural order fourth, gramina: MALE CAL. biflorous and aristated glume: COR. a beardless glume: FEMALE CAL. a uniflorous, patulous, and ovate glume: style bifid: SEED cartilaginous.

OLZOFFSKI (Andrew), LL. D., an eminent Polish divine, born in 1618, and descended of an ancient family in Prussia. Having finished his studies, in law and divinity, he went to Rome, and took his degree of LL. D. He went thence to Paris, whence he attended the princess Mary Louisa, on her marriage with Ladislaus IV., king of Poland, to whom he was made Latin secretary. He attended the election of the emperor Leopold I. as ambassador from Poland, and on his return was made prebendary to the crown, bishop of Culm, and afterwards vice-chancellor, and grand chancellor. After the deaths of Ladislaus IV. and Michael, he had a great hand in procuring the election of king John Sobieski, who made him archbishop of Gnesna, and Primate of Poland. His right to the primacy being disputed by the bishop of Cracow, he published a work in defence of his right. He wrote several other tracts; and died at Dantzic, whither he had gone to settle some disputes between the senate and people, in 1678.

OMAGH, a barony in the county Tyrone, and province of Ulster, in Ireland. In this barony is a town of the same name, upon the river Ownreagh. The town, which is also the assize town of the county, is in the form of a Y, the stem being a long and regular avenue. Here is a new court-house, a gaol, large church, Roman Catholic chapel, and two Presbyterian meeting-houses. Omagh is a good market town, holds four fairs annually, is on the great road from Dublin to Londonderry, and has some very

interesting scenery, as well as ancient remains of military architecture in the vicinity. The name Omagh appears to be derived from Oigh-magh, which signifies the residence of the chief.

OMAR I., surnamed Ebn Al Khattab, successor of Abu Becr, was originally a violent opposer of the Arabian prophet. Mahomet felt this opposition, and regretted it; and it is said by prayer effected the conversion of this his dangerous antagonist. Omar had no sooner read the twentieth chapter of the Koran than he was convinced; upon which he instantly repaired to Mahomet and his followers, and declared his conversion. On the death of Abu Becr, who succeeded the impostor in the regal and pontifical dignities, Omar was raised to the throne. He conquered the Persians, and Jerusalem submitted to his power; nor does he appear to have been checked in a single instance. He was stabbed by a person of the Magian sect while performing his devotions; and, after languishing three days, died in the month of Dhu'l-hajja, and twenty-third year of the Hegira, which began A. D. 643, aged sixty-three. The Arab historians say that he reigned between ten and eleven years. His extensive conquests made the Moslem empire one of the most powerful and formidable monarchies in the world. His disposition is represented as one of the best possible, and his temperance is highly extolled.

OMAR II., the thirteenth caliph of the race of Ommiades, succeeded his cousin Solyman in 717. He laid siege to Constantinople, but was forced to raise it, and his fleet suffered much from a violent tempest. He was poisoned at Emessa, A. D. 720.

OMBI, a city of ancient Egypt, afterwards called Arsinoe and Crocodilopolis, was the capital of one of the nomes into which that country was divided, and is remarkable in the annals of idolatry for the hatred of its inhabitants to the religion of their neighbours the citizens of Tentyra. The cities and nomes of Egypt being at one time prone to rebellion, and to enter into conspiracies against monarchical government, one of their most politic kings contrived to introduce into the neighbouring nomes the worship of different animals; so that, while each revered the deity which itself held sacred, and despised that which its neighbours had consecrated, they could hardly be brought to join cordially in one common design to the disturbance of the government. In this distribution of gods, he conferred upon Ombi the crocodile, and upon Tentyra the mortal enemy of that monster, the ichneumon. The consequence was, that while the Ombites worshipped the crocodile, the Tentyrites took every opportunity of slaughtering him. Thus the mutual hatred of those cities, on account of their hostile gods, rose to such a height, that, whenever the inhabitants of the one were engaged in the more solemn rites of their religion, those of the other were sure to embrace the opportunity of setting fire to their houses, and doing them every injury in their power. And this animosity continued between the inhabitants of the two cities long after the crocodile and ichneumon had lost their divinity.

OM'BRE. *n. s.* Span. *hombre* (a man). A game of cards, played by three; supposed suitable to men.

He would willingly carry her to the play; but she had rather go to lady Centaure's, and play at ombre. *Tatler.*

When ombre calls, his hand and heart are free, And, joined to two, he fails not to make three. *Young.*

OMBRE is a game borrowed from the Spaniards, and played by two, by three, or by five persons, but generally by three. When three play, nine cards are dealt to each party; the whole pack being only forty, as the eights, nines, and tens, are thrown out. There are two sorts of counters for stakes, the greater and the less; the last having the same proportion to the other as a penny to a shilling: of the greater counters each man stakes one for the game; and one of the lesser for passing for the hand, when eldest, and for every card taken in. As to the order and value of the cards, the ace of spades, called spadillo, is always the highest trump, in whatsoever suit the trump be; the manille, or black duce, is the second; and the basto, or ace of clubs, is always the third: the next in order is the king, the queen, the knave, the seven, the six, the five, four, and three. Of the black there are eleven trumps; of the red twelve. The least small cards of the red are always the best, and the most of the black; except the duce and red seven, both of which are called the manilles, and are always second when the red is a trump. The red ace, when a trump, enters into the fourth place, and is called punto; otherwise it is only called an ace. The three principal cards are called matadores; which have this privilege, that they are not obliged to attend an inferior trump when it leads; but, for want of a small trump, the person may renounce trumps, and play any other card; and, when these are all in the same hand, the others pay three of the greater counters a-piece; and, with these three for a foundation, he may count as many matadores as he has cards in an uninterrupted series of trumps; for all which the others are to pay one counter a-piece. He who has the first hand is called ombre, and has his choice of playing the game, of naming the trump, and of taking in as many and as few cards as he pleases; and after him the second, &c. But, if he does not name the trump before he looks on the cards he has taken in, any other may prevent him, by naming what trump he pleases. He that has the first hand should neither take in, nor play, unless he has at least three sure tricks in his hand: for, as he wins the game who wins most tricks, he that can win five of the nine has a sure game; which is also the case if he wins four, and can so divide the tricks as that one person may win two, and the other three. If a person plays without discarding or changing any cards, this is called playing sans prendre; and, if another wins more tricks than he, he is said to win codille. The oversights in the course of the game are called beasts. And, if the ombre wins all the nine tricks, it is called winning the vole. In ombre by five, which many, on account of its not requiring so close an attention, prefer to that by

three, only eight cards a-piece are dealt; and five tricks must be won, otherwise the ombre is beasted. Here the person who undertakes the game, after naming the trump, calls a king to his assistance; upon which the person in whose hand the king is, without discovering himself, is to assist him as a partner, and to share his fate. If, between both, they can make five tricks, the ombre wins two counters, and the auxiliary king only one; but, when the counters are even, they divide them equally. If the ombre venture the game without calling in any king this too is called playing sans prendre; in which case the other four are all against him, and he must win five tricks alone, or be beasted. The rest is much the same as by three.

OMBRE DE SOLEIL, or shadow of the sun, in heraldry, is when the sun is borne in armory, so as that the eyes, nose, and mouth, which at other times are represented, do not appear; and the coloring is thin, so that the field can appear through it.

OMEGA, *n. s.* Gr. *ωμυα*. The last letter of the Greek alphabet; used in Scripture, therefore, for the last.

I am alpha and omega, the beginning and the ending. *Revelations.*

OM'ELET, *n. s.* Fr. *omelette*. A kind of pancake made with eggs.

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|----------------------------|---|
| O'MEN, <i>n. s.</i> | } Latin <i>omen</i> , <i>ominor</i> . A prognostic; a sign or token of some supposed future event: omened and ominous mean containing or exhibiting omens, the latter being generally used in a bad sense, or of inauspicious omens: to ominate is to prognosticate; foretold; pretend to foretell: ominously and ominousness follow the senses of ominous. |
| O'MENED, <i>adj.</i> | |
| OM INATE, <i>v. a.</i> | |
| OM INOUS, <i>adj.</i> | |
| OM INOUSLY, <i>adv.</i> | |
| OM INOUSNESS, <i>n. s.</i> | |

Let me be duke of Clarence,
For Glo'ster's dukedom is ominous. *Shakespeare.*

Pomfret, thou bloody prison,
Fatal and ominous to noble peers. *Id.*
Though he had a good ominous name to have made a peace, nothing followed. *Bacon's Henry VII.*
Hammond would steal from his fellows into places of privacy, there to say his prayers, *omens* of his future pacifick temper and eminent devotion. *Fell.*

These accidents, the more rarely they happen, the more ominous are they esteemed, because they are never observed but when sad events do ensue. *Hayward.*

It brave to him, and ominous does appear,
To be opposed at first, and conquer here. *Cowley.*

Roving the Celtic and Iberian fields,
He fast betakes him to this ominous wood. *Milton.*

The falling of salt is an authentick presagement of ill luck, yet the same was not a general prognostick of future evil among the ancients; but a particular *omination* concerning the breach of friendship. *Browne.*

When young kings begin with scorn of justice,
They make an *omen* to their after reign. *Dryden.*

Pardon a father's tears,
And give them to Charinus' memory:
May they not prove as ominous to thee. *Id.*

As, in the heathen worship of God, a sacrifice without an heart was accounted *ominous*; so, in the Christian worship of him, an heart without a sacrifice is worthless. *South.*

This *ominates* sadly, as to our divisions with the Romanists. *Decay of Piety.*

Choose out other smiling hours
Such as have lucky *omens* shed
O'er forming laws and empires rising. *Prior.*

Fame may prove,
Or omened voice, the messenger of Jove,
Propitious to the search. *Pope's Odyssey.*

England a fortune-telling host
As numerous as the stars can boast;
Matrons who toss the cup, and see
Omens of fate in grounds of tea. *Churchill.*

OMEN, in its proper sense, signifies a sign or indication of some future event taken from the language of a person speaking without any intent to prophesy. Hence Tully says, 'the Pythagoreans attend to the discourse not only of gods, but also of men, which they call omens.' This sort of omen was supposed to depend much upon the will of the person concerned in the event; whence the phrases *acceptit omen*, *arripuit omen*. Such were the original omens; but they were afterwards derived from things as well as from words. Thus Paterculus, speaking of the head of Sulpicius on the rostrum, says, it was 'the omen of an impending proscription.' Suetonius says of Augustus, that he believed implicitly in certain omens; and that, 'if his shoes were improperly put on in the morning, especially if the left shoe was put upon his right foot, he held it for a bad omen.' Omen was used in a still larger sense, to signify an augury; as in the following line of Tully: 'Thus Jove confirmed the bright omen of the eagle.' It was lastly used, in the most generic sense of all, for a portent or prodigy; as in the third book of the *Æneid*, where a myrtle torn up by *Æneas* dropped blood. Upon this appearance, says the hero,—

Mute and amazed, my hair with terror stood;
Fear shrunk my sinews, and congealed my blood.

And the same thing being repeated upon his breaking a branch from another tree, he prayed to the gods to avert the omen. These portentous or supernatural omens were either external or internal. Of the former sort were those showers of blood so frequently occurring in the Roman history, which were much of the same nature with this adventure of *Æneas*, which he calls *monstra dæm*. Of the second sort were those sudden consternations which, seizing upon men without any visible cause, were imputed to the agency of the god Pan, and hence called panic fears. But indeed there was hardly anything, however trivial, from which the ancients did not draw omens. That it should have been thought a direful omen when any thing befel the temples, altars, or statues of the gods, need excite no wonder; but that the meeting of a eunuch, a negro, a bitch with whelps, or a snake lying in the road, should have been looked upon as portending bad fortune is a deplorable instance of human weakness, and of the pernicious influence of superstition on the mind. It is probable that this practice of making ordinary events ominous

of good or bad fortune took its rise in Egypt, the parent country of almost every superstition of paganism; but wherever it may have arisen, it spread itself over the whole inhabited globe, and still prevails in a greater or less degree among the vulgar of all nations. That paying any regard to omens is contrary to every principle of sound philosophy, all philosophers will readily acknowledge; and whoever has studied the writings of St. Paul must be convinced that it is inconsistent with the spirit of genuine Christianity.

OMENTUM, *n. s.* Lat. *omentum*. The reticulated caul that covers the guts.

When the peritonæum is cut, as usual, and the cavity of the abdomen laid open, the *omentum* or *caul* presents itself first to view. This membrane, which is like a wide and empty bag, covers the greatest part of the guts. Quincy.

OMENTUM. See ANATOMY, Index.

OMER, **HOMER**, **CORUS**, or **CHOMER**, in the Jewish antiquities, was a measure containing ten baths, or seventy-five gallons and five pints, as a measure of things liquid, and thirty-two pecks and one pint, as a measure for things dry. The *corus* or *omer* was most commonly a measure for things dry; and the greatest that was used among the Jews. It contained, according to the rabbins, ten ephahs or thirty sata or seahs. *Corus* is the most usual term in the historical writers, and *omer* or *chomer* among the prophets.

OMER (St.), a handsome and strong town of the department of the Pas de Calais, France, and the chief place of a subprefecture. Here is an inferior court of judicature, boards of trade and manufactures, an agricultural society, and a communal college. It is a post town of the third military division, with 18,250 inhabitants. This town is situated in a marshy country, on the Aa, which is navigable here, and at the mouth of the canal of Neuf fossé. It is generally well built, and surrounded with good fortifications. The streets are broad, spacious, and airy, and the great square is adorned with several beautiful buildings. The foundation of St. Omer is traced to as early a period as 626, the epoch of the founding of the celebrated abbey of Bertin. It was encompassed with walls in 880, and has increased considerably since that period. The French took possession of it in 1677. Here are manufactures of cloth, twisted thread, starch, soap, oil, glue, pipes, and fishing nets; also dye-houses, sugar refining houses, brass foundries, paper mills, and tan-yards. A considerable trade is carried on in corn, wine, oil, brandy, grocery, flax and coal. The public library contains 20,000 volumes. The cathedral is a fine Gothic edifice; the college church, with its two towers and its wooden arch, is very remarkable. There are also some fine walks near the town. It is fifty-one miles north-west of Arras, thirty-six east of Dunkirk, and 178 north of Paris.

OMISSION, *n. s.* } Lat. *omissus*. A forgetting; or neglect of
OMIT, *v. a.* }
OMITTANCE, *n. s.* } performance: to omit is, to leave out; neglect to practise or to mention: omission, an obsolete synonyme of omission.

He said, mine eyes were black, and my hair black: And, now I am remembered, scorned at me;

I marvel, why I answered not again;
But that's all one: *omittances* is no quittance.

Shakespeare.

Omission to do what is necessary,
Seals a commission to a blank of danger. *Id.*
These personal comparisons I omit, because I would say nothing that may savour of a spirit of flattery. Bacon.

Great Cato there, for gravity renowned,
Who can omit the Gracchi, who declare
The Scipios' worth? Dryden.

Whilst they were held back purely by doubts and scruples, and want of knowledge without their own faults, their omission was fit to be connived at.

Kestlenell.

The most natural division of all offences is into those of omission and those of commission.

Addison.

Her father omitted nothing in her education, that might make her the most accomplished woman of her age. *Id.*

If he has made no provision for this change, the omission can never be repaired, the time never redeemed. Rogers.

Omitting, therefore, any mention of sultry Sirius—sylvan shade—purling rills—gurgling fountains, &c., he tells us simply that it was 'all on a summer's day.' Canning.

OMMANEY, **CAPE**, a very remarkable promontory, the south extremity of king George the Third's archipelago. It terminates in a high bluff rocky cliff, with a round rocky islet close to it; and by its shores on the eastern side taking a sharp northerly direction, it becomes a very narrow point of land, which received the name which it now bears from captain Colnety. Long. 225° 37' 30" E., lat. 56° 10' N.

OMMEN, a town of the Netherlands, in the province of Overysse, on the Vechte, with 800 inhabitants. A few miles to the north lies the fortress of Ommerschautz, fourteen miles east of Zwolle.

OMMON, a division of Arabia, comprising the coast extending from its eastern extremity of Rasalgate, to the entrance of the Persian Gulf. The interior consists in a great measure of sandy wastes. The coast, however, is diversified by mountains, and well watered; so that it yields barley, palms, lentiles, grapes, &c. The inhabitants have always been amongst the most active and commercial Arabs. They are the best navigators of Arabia: and use vessels called *tranckies*, very broad in proportion to their length, and which have sails made of cloth, instead of those of mat which are used in Yemen; but the most singular circumstance in their construction is, that the planks, instead of being fastened together by nails, are merely tied and sewed. Ommon has repeatedly become an object of ambition. The Portuguese early invaded and took possession of Maskat, its principal port, which they retained for nearly 200 years. In the course of the last century Nadir Shah invaded and conquered it; but, his arms being diverted in other quarters, the native princes regained the dominion. Rostak is the residence of the Imam; but Maskat is the place through which the country is known to Europeans. Kalhat and Sohar are also large towns.

OMNIFARIOUS, *adj.* Lat. *omnifarium*. Of all kinds.

These particles could never of themselves, by *omnifarious* kinds of motion, whether fortuitous or mechanical, have fallen into this visible system.

Bentley.

But if thou *omnifarious* drinks wouldst brew;
Besides the orchard, every hedge and bush
Affords assistance.

Philips.

OMNIFIC, *adj.* Lat. *omnis* and *facio*. All-creating.

Silence, ye troubled waves, and thou deep peace!
Said then the '*omnifick*' word, your discord end.

Milton.

OMNIPAR'ITY, *n. s.* Lat. *omnis* and *par*. General equality.

Their own working heads affect, without commandment of the word, to wit, *omniparity* of churchmen.

White.

OMNIPOTENCE, *n. s.* } Lat. *omnipotent*
OMNIPOTENCY. } *tia*. Almightiness;

OMNIPOTENT, *adj.* } boundless or universal power.

You were also, Jupiter, a swan, for the love of Leda: oh, *omnipotent* love! how near the god drew to the complexion of a goose!

Shakespeare.

The perfect being must needs be *omnipotent*; both as self-existent and as immense; for he that is self-existent, having the power of being, hath the power of all being; equal to the cause of all being, which is to be *omnipotent*.

Grew.

Whatever fortune

Can give or take, love wants not, or despises;
Or by his own *omnipotence* supplies.

Denham.

As the soul bears the image of the divine wisdom, so this part of the body represents the *omnipotency* of God, whilst it is able to perform such wonderful effects.

Wilkins.

The greatest danger is from the greatest power, and that is *omnipotency*.

Tillotson.

How are thy servants blest, O Lord,

How sure is their defence;

Eternal wisdom is their guide,

Their help, *omnipotence*.

Addison.

Will *omnipotence* neglect to save,

The suffering virtue of the wise and brave?

Pope.

OMNIPRES'ENCE, *n. s.* } Lat. *omnis* and
OMNIPRES'ENT, *adj.* } *præsens*. Ubiquity; universal presence.

He also went

Invisible, yet staid, such privilege

Hath *omnipresence*. *Milton's Paradise Lost.*

Adam, thou knowest his *omnipresence* fills

Land, sea, and air.

Id.

The soul is involved and present to every part; and, if my soul can have its effectual energy upon my body with ease, with how much more facility can a being of immense existence and *omnipresence*, of infinite wisdom and power, govern a great but finite universe!

Hale.

God is *omnipresent* ever felt

In the void waste as in the city full.

Thomson.

OMNISCIENCE, *n. s.* } Lat. *omnis* and
OMNISCI'ENT, *adj.* } *scientia*. Boundless
OMNISCI'OUS. } or universal know-

ledge; infinite wisdom: *omniscient* and *omniscious* are both used as the adjective.

By no means trust to your own judgment alone: for no man is *omniscient*. *Bacon's Advice to Vilhers.*

In all this misconstruction of my actions, as I have no judge but God above me, so I can have comfort to appeal to his *omniscience*. *King Charles.*

I dare not pronounce him *omniscious*, that being an attribute individually proper to the Godhead, and incommunicable to any created substance.

Habswill on Providence.

What can escape the eyes

Of God all-seeing, or deceive his heart

Omniscient?

Milton's Paradise Lost.

For know, that heaven's *omniscient* King

Keeps register of every thing;

And nothing may we use in vain,

Even beasts must be with justice slain. *Marvell.*

Thinking by retirement to obscure himself from God, Adam infringing the *omniscience* and essential ubiquity of his Maker, who, as he created all things, is beyond and in them all.

Browne.

Since thou boast'st the '*omniscience*' of a God,
Say in what cranny of Sebastian's soul,
Unknown to me, so loathed a crime is lodged?

Dryden.

Whatsoever is known is some way present; and that which is present cannot but be known by him who is *omniscient*.

South.

It is one of the natural notions belonging to the Supreme Being, to conceive of him that he is *omniscient*.

Wilkins.

The views of that *Omniscient* Spirit who gave the prophecy—not the surmises' of the men whose faculties or whose organs that Spirit employed, are to be the standard of interpretation.

Horsley.

OMNIVOROUS, *adj.* Lat. *omnis* and *voro*. All-devouring.

OMOLONE, a river of Irkoutsk, Asiatic Russia, which falls into the Kolyma, after a course of about 250 miles. Its banks are chiefly inhabited by exiles, who employ themselves in fishing and hunting.

OMOPHAGIA, an ancient Greek festival, in honor of Bacchus Omophagos. This festival was observed in the same manner with the other festivals of Bacchus, in which they counterfeited madness. What was peculiar to it was, that the worshippers used to eat the entrails of goats, raw and bloody, in imitation of the god, who was supposed to have done the same thing.

OMPHACINE OIL, an ancient name for a viscous brown juice extracted from green olives. With this oil the ancient athlete, when going to wrestle, anointed themselves; and, when that gymnastic exercise was over, they rolled themselves in the sand, which, mixing with the oil and sweat on their bodies, constituted the strimenta so highly esteemed in the cure of several diseases. This precious medicine was carefully scraped off the body of the athlete with a kind of instrument something like a comb, which was called strigilis; and such was the demand for the scrapings that they were a very lucrative article of trade.

OMPHALE, in fabulous history, a queen of Lydia, daughter of Jardaunus. She married Imolus, who at his death left her mistress of his kingdom. Omphale had been informed of the great exploits of Hercules, and wished to see so illustrious a hero. Her wish was soon gratified. After the murder of Eurytus, Hercules by way of atonement was ordered to be sold as a slave, that he might recover the use of his senses. Mercury was commissioned to sell him, and Omphale bought him, and restored him to liberty. The hero became enamored of his mistress, and the queen favored his passion, and had two sons by

him, Agelaus and Lamon; from whom were descended Gyges and Cræsus; though some make these Lydian monarchs spring from Alcæus, a son of Hercules, by one of the female servants of Omphale. Hercules is represented by the poets as so desperately enamoured of the queen, that, to conciliate her, he spun by her side among her women, while she covered herself with the lion's skin, and armed herself with the club of the hero, often striking him with her sandals for the uncouth manner with which he held the distaff, &c.

OMPHALEA, in botany, a genus of the triandria order, and the monœcia class of plants: MALE CAL. tetraphyllous: COR. none: the receptacle into which the antheræ are sunk is ovate: FEMALE CAL. and COR. as in the male; the stigma trifid: CAPS. carnosous and trilocular: SEED one. There are two species.

OMPHALO-MESENTERIC, in anatomy. All fetuses are wrapped up in at least two coats or membranes; most of them have a third called allantoides or urinary. Some, as the dog, cat, hare, &c., have a fourth, which has two blood-vessels, viz. a vein and an artery, called omphalo-mesenterics, because passing along the string to the navel, and terminating in the mesentery.

OMRATTEE, a large fortified trading town of Hindostan, in the province of Berar. It belongs to the Nizam; and from this place a considerable quantity of cotton is sent the distance of 500 miles by land, to Mirzapore, a famous mart on the banks of the Ganges, in the province of Allahabad.

OMSK, a fortress and small town of the government of Tomsk, in Asiatic Russia, at the junction of the river Om with the Irtysch. The original fort was built in 1716, upon a spot higher up the Irtysch; but in 1766 general Springer fixed upon the present site, where a regular and strong fortress has been erected. Omsk is intended as a barrier against the Kirghises: it terminates the military line of the Irtysch, and begins that of the Ischim. The general's house, church, and military school, are handsome edifices. Long. 74° 54' E., lat. 55° 4' N.

ON, *prep., adv., & interj.* } Sax. *on*; Goth. *ONSET*, *n. s. & v. a.* } *on*; Danish and *ON'SLAUGHT*, } Teut. *an*; Belg. *aan*, *aen*, *an*. As a preposition, it is placed before that which is under, which supports any thing, and which keeps it from falling; which is struck by a body falling; or to which the thing preceding it is added: also accumulation; elevation; progression; approach; invasion; reliance; occasion or motive; invocation; imprecation; stipulation or condition; distinction or opposition; manner; it is placed before the subject of action or passion. As an adverb, it signifies in order of succession; forward; upon (as an article of dress); resolution, and is the regular opponent of *off*. As an interjection, it is taken elliptically for 'go on,' and commands or encourages forward or to attack. On fire, denotes the state of combustion: onset (*on* and *set*), means a set-on or attack; storm; assault; something set on: to attack or assault: on-slaught is an obsolete compound (of *on* and *slay*) of the same sense: onward is forward; progressively; further on.

In the second month, *on* the twenty-seventh day.

Genesis.

A long cloak he had *on*.

Sidney.

The horses burnt as they stood fast tied in the stables, or, by chance breaking loose, ran up and down with their tails and manes *on* a light fire.

Knolles's History of the Turks.

The Rhodians, *on* the other side, mindful of their former honour, valiantly repulsed the enemy.

Knolles.

What news?

—Richmond is *on* the seas.

—There let him sink, and be the seas *on* him.

Shakespeare.

This tempest,
Dashing the garment of this peace, abbed
The sudden breach *on't*.

Id. Henry VIII.

On each side her

Stood pretty dimpled boys, like smiling

Cupids. *Id. Antony and Cleopatra.*

Let them sleep, let them sleep *on*,

Till this stormy night be gone,

And the eternal morrow dawn. *Crashaw.*

Distracted terror knew not what was best;
On what determination to abide. *Daniel's Civil War.*

Since 'tis decreed, and to this period lead

A thousand ways, the noblest path we'll tread;

And bravely *on*, till they or we, or all,

A common sacrifice to honour fall. *Denham.*

Satan was now at hand, and from his seat

The monster, moving *onward*, came as fast

With horrid strides. *Milton's Paradise Lost.*

Him thro' the spicy forest *onward* come

Adam discerned, as in the door he sat

Of his cool bower. *Id.*

How soon hath Time, the subtle thief of youth,

Sto'n *on* his wing my three and twentieth year.

Milton.

So saying, *on* he led his radiant files. *Id.*

You roam about, and never are at rest;

By new desires, that is, new torments still possess:

As in a feverish dream you still drink *on*,

And wonder why your thirst is never gone. *Dryden.*

The joy of a monarch, for the news of a victory, must not be expressed like the extacy of a harlequin

on the receipt of a letter from his mistress. *Id.*

Hence *on* thy life; the captive maid is mine,

Whom not for price or prayers I will resign. *Id.*

Could tears recal him into wretched life,

Their sorrow hurts themselves; *on* him is lost. *Id.*

Th' unhappy husband, husband now no more,

Did *on* his tuneful harp his loss deplore. *Id.*

Mischiefs *on* mischiefs, greater still and more,

The neighbouring plains with arms are covered o'er. *Id.*

The best way to be used by a father *on* any occasion, to reform any thing he wishes mended in his son. *Locke.*

If the tenant fail the landlord, he must fail his creditor, and he his, and so *on*. *Id.*

A thriving gamester has but a poor trade *on't*, who fills his pockets at the price of his reputation. *Id. on Education.*

As he forbore one act, so he might have forbore another, and after that another, and so *on*, till he had by degrees weakened, and at length mortified and extinguished the habit itself. *South.*

'Go to, I did not mean to chide you;

On with your tale. *Rowe's Jane Shore.*

The spacious firmament *on* high. *Addison.*

On God's providence and *on* your bounty, all their present support and future hopes depend. *Smallridge.*

We abstain on such solemn occasions from things lawful, out of indignation that we have often gratified ourselves in things unlawful. *Id.*

Stiff in brocade, and pinched in stays,
Her patches, paint, and jewels on;
All day let envy view her face,
And Phillis is but twenty-one. *Prior.*

These smaller particles are again composed of others much smaller, all which together are equal to all the pores or empty spaces between them; and so on perpetually till you come to solid particles, such as have no pores. *Newton.*

What kindled in the dark the vital flame,
And, ere the heart was formed, pushed on the red-
ning stream? *Blackmore on Creation.*

A painted vest prince Voltager had on,
Which from a naked Pict his grandsire won. *Blackmore.*

On me, on me let all thy fury fall,
Nor err from me, since I deserve it all. *Pope.*
His fancy grows in the progress, and becomes on
fire, like a chariot wheel, by its own rapidity. *Id.*
On then, my muse! and fools and knaves expose,
And, since thou can'st not make a friend, make foes. *Young.*

But aye the ruthless driver goads them on,
And aye of barking dogs the bitter throng,
Makes them renew their unmelodious moan. *Thomson.*

Place me on Sirmium's marble steep,
Where nothing save the waves and I
May hear our mutual murmurs sweep,
There, swan-like, let me sing and die. *Byron.*
Thou too—the nameless bard!—whose honest zeal
For law, for morals, for the public weal,
Pours down impetuous on the country's foes
The stream of verse, and many-linguaged prose. *Canning.*

On, in ancient geography, a city of Egypt, sacred to the sun, and by the Greeks, on that account, called Heliopolis. It was remarkable for the wisdom and learning of its priesthood, and for the spacious buildings in which they cultivated the studies of philosophy and astronomy. The priests of On were esteemed more noble than all the other priests of Egypt, and were always ministers of state, owing to their high antiquity and great learning. Bishop Warburton affirms that they held the system which now distinguishes the name of Copernicus; and that Pythagoras received it from Oenuphis, a priest of On, and brought it into Greece.

ONE, *adj. & n. s.* } Sax. *cen*; Goth. *ein*;
ONCE, *adj. & n. s.* } Teut. *ein*; Gr. *ev*. Single;
ONE'EYED, } sole; different or diverse
ONE'NESS, *n. s.* } (opposed to another); the

same; future, as in 'one day:' as a noun substantive, an unit; single person or mess; the same thing; first hour; a person indefinitely; a distinct or particular person; an eminent person; persons united; concord; agreement: it takes, but not elegantly, a plural both absolutely and relatively, as 'the great ones of the world;' 'his waking thoughts only reflect his sleeping ones.' Once signifies a single time; an instant or indivisible point of time; time past and not to be repeated or again occur; at the immediate time; formerly: as a noun substantive it seems to mean occasion; occurrence; instance; as 'this or that once:' one-eyed is having but one eye: oneness, quality of being one; unity; compactness.

For he hid this thyng in offryng himselfe *oonys*.
Wiclif.

Ask from the one side of heaven unto the other, whether there hath been any such thing as this?

Deuteronomy iv. 32.

When any one heareth the word of the kingdom, and understandeth it not, then cometh the wicked one and catcheth away that which was sown in his heart. *Mat. xiii. 19.*

It is not so worthy to be brought to heroic effects by fortune or necessity, like Ulysses and Æneas, as by one's own choice and working. *Sidney.*

One day when Phoebe fair,
With all her band, was following the chase,
This nymph, quite tired with heat of scorching air,
Sat down to rest. *Spenser.*

Although the beauties, riches, honours, sciences, virtues, and perfections of all men, were in the present possession of one, yet somewhat beyond and above all this there would still be sought and earnestly thirsted for. *Hooker.*

Our God is one, or rather very oneness and mere unity, having nothing but itself in itself, and not consisting, as all things do besides God, of many things. *Id.*

If one by one you wedded all the world,
She you killed would be unparalleled. *Shakespeare.*

Till 'tis one o'clock, our dance of custom
Let us not forget. *Id.*

Then must you speak
Of one, that loved not wisely, but too well;
Of one, not easily jealous; but, being wrought,
Perplexed in the extreme. *Id. Othello.*
Be not found here; hence with your little ones. *Shakespeare.*

I answered not again;

But that's all one. *Id.*

As I have made ye one, lords, one remain:
So I grow stronger, you more honour gain. *Id.*
Pindarus the poet, and one of the wisest, acknowledged also one God, the most high, to be the father and creator of all things. *Raleigh.*

That man should be the teacher is no part of the matter; for birds will learn one of another.

Bacon's Natural History.

The king was well instructed how to carry himself between Ferdinando and Philip, resolving to keep them at one within themselves. *Bacon.*

Trees that bear mast are fruitful but once in two years; the cause is, the expence of sap. *Id.*

Heaven waxeth old, and all the spheres above
Shall one day faint, and their swift motion stay;
And time itself, in time, shall cease to move,
But the soul survives and lives for aye. *Devis.*

If any one prince made a felicity in this life, and left fair fame after death, without the love of his subjects, there were some colour to despise it. *Suchling.*

The obedience of the one to the call of grace, when the other, supposed to have sufficient, if not an equal measure, obeys not, may reasonably be imputed to the humble, malleable, melting temper. *Hammond.*

The oneness of our Lord Jesus Christ, referring to the several hypostases, is the one eternal, indivisible, divine nature, and the eternity of the son's generation, and his co-eternity, and his consubstantiality with the Father when he came down from Heaven and was incarnate. *Id.*

Once every morn he marched, and once at night. *Cowley.*

Thereon his arms and once-loved portrait lay,
Thither our fatal marriage-bed convey. *Denham.*

At once with him they rose:

Their rising all at once was as the sound
Of thunder heard remote. *Milton's Paradise Lost.*

Edward I. was *one* who very well knew how to use a victory, as well as obtain it. *Hale.*

These successes are more glorious which bring benefit to the world, than such ruinous *ones* as are dyed in human blood. *Glanville.*

The church is therefore *one*, though the members may be many ; because they all agree in *one* faith. There is *one* Lord and *one* faith, and that truth once delivered to the saints, which whosoever shall receive, embrace, and profess, must necessarily be accounted *one* in reference to that profession : for if a company of believers become a church by believing, they must also become *one* church by believing *one* truth. *Pearson.*

With lives and fortunes trusting *one*,
Who so discreetly used his own. *Waller.*

Both the matter of the stone and marcasite had been at once fluid bodies, till *one* of them, probably the marcasite, first growing hard, the other, as being yet of a more yielding consistence, accommodated itself to the harder's figure. *Boyle.*

He that will overlook the true reason of a thing which is but *one*, may easily find many false *ones*, error being infinite. *Tillotson.*

He is not at *one* with himself what account to give of it. *Id.*

From his lofty steed he flew,
And raising *one* by *one* the suppliant crew,
To comfort each. *Dryden's Knight's Tale.*

If *one* must be rejected, *one* succeed,
Make him my lord, within whose faithful breast,
Is fixed my image, and who loves me best. *Id.*

Night came on not by degrees prepared,
But all at *once* ; at *once* the winds arise,
The thunders roll. *Id. Cimon and Iphigenia.*

Fuscinus, those ill deeds that sully fame,
In blood *ones* tainted, like a current run
From the lewd father to the lewder son. *Dryden.*

It is *one* thing to draw outlines true, the features like, the proportions exact, the colouring tolerable, and another thing to make all these graceful. *Id.*

A sign-post dauber would disdain to paint
The *emerged* heroe on his elephant. *Id.*

It is *one* thing to think right, and another thing to know the right way to lay our thoughts before others with advantage and clearness. *Locke.*

Suppose the common depth of the sea, taking *one* place with another, to be about a quarter of a mile. *Burnet.*

There can be no reason why we should prefer any *one* action to another, but because we have greater hopes of advantage from the *one* than from the other. *Smallridge.*

Arbitrary power tends to make a man a bad sovereign, who might possibly have been a good *one*, had he been invested with an authority limited by law. *Addison's Freeholder.*

My legs were closed together by so many wrappers *one* over another, that I looked like an Egyptian mummy. *Addison.*

The mighty family
Of *one-eyed* brothers hasten to the shore. *Id.*

Now that the fixed stars by reason of their immense distance, appear like points, unless so far as their light is dilated by refraction, may appear from hence, that when the moon passes over and eclipses them, their light vanishes, not gradually like that of the planets, but all at *once*. *Newton.*

One would imagine these to be the expressions of a man blessed with ease, affluence, and power ; not of *one* who had been just stripped of all those advantages. *Atterbury.*

The following plain rules and directions are not *de* less useful because they are plain *ones*. *Id.*

This hath all its force at *once*, upon the first impression, and is ever afterwards in a declining state. *Id.*

For provoking of urine, *one* should begin with the gentlest first. *Arbuthnot on Aliments.*

Two bones rubbed hard against *one* another, or with a file, produce a fetid smell. *Arbuthnot.*

When joined in *one*, the good, the fair, the great,
Descends to view the muses humble seat. *Glanville.*

At *one* time they keep their patients so warm as almost to stifle them, and all of a sudden the cold regimen is in vogue. *Baker.*

For some time *one* was not thought to understand Aristotle, unless he had read him with Averroes's comment. *Id.*

In your tuneful lays,
Once more resound the great Apollo's praise. *Pope.*

This evil fortune which attends extraordinary men, hath been imputed to divers causes that need not be set down, when so obvious an *one* occurs, that when a great genius appears, the dunces are all in conspiracy against him. *Swift.*

A good acquaintance with method will greatly assist every *one* in ranging human affairs. *Watts.*

Smooth to the shelving brink a copious flood
Rolls fair and placid ; where collected all
one impetuous torrent down the steep
It thundering shoots. *Thomson.*

New forms in dire vicissitude invade,
The rustling brake alarms and quivering shade ;
Nor light, nor darkness, brings his pain-relief,
One shows the plunder, a *one* hides the thief. *Johnson.*

God, working ever on a social plan,
By various ties attaches man to man :
He made at first, though free and unconfined,
One man the common father of the kind. *Cowper.*
The wretch that works, and weeps without relief,
Has *One* that notices his silent grief.
He, from whose hands alone all power proceeds,
Ranks its abuse amongst the foulest deeds ;
Considers all injustice with a frown,
But marks the man that treads his fellow down.

And she may now be as discreet and wise,
As *once* absurd in all discerning eyes.
Sobriety perhaps may now be found
Where *once* intoxication pressed the ground. *Id.*
When *one* is vexed by *one* person, to revenge *one's* self on another that happens to come in the way, is the vilest injustice. *Sheridan.*

But pause *one* moment more and take
The curse of him thou didst forsake,
And look *once* more to heaven, and see
Its love for ever shut from thee. *Byron.*

Who, when terror and doubt through the universe reigned,
While rapine and treason their standards unfurled,
The heart and the hopes of his country maintained,
And *one* kingdom preserved midat the wreck of the world. *Canning.*

ONEHOW, one of the Sandwich Islands, in the North Pacific, about forty miles in circumference. It is fruitful in yams, and contains about 10,000 inhabitants. The coast is high, and rises on the east abruptly from the sea ; the rest of the island consists of, low ground, except a round bluff head on the south-east point.

ONEGA, a large lake of European Russia, in the government of Olonetz, to the east of Ladoga. Its length is about 130 miles, its breadth,

from seventy to eighty. It contains several islands, of which the basis is marble: its waters are beautifully clear, and abound in fish. The Svir, a navigable stream, joins these lakes; and as the smaller lake of Bielo, situated to the south, and in the direction of the Wolga, is at the distance of only twenty-five miles, it has been proposed to join these by a canal.

ONEGA, a river of the north of European Russia, which rises to the east of Onega, and, flowing northward, falls into the White Sea, in a gulf of this name.

ONEGLIA, a province of Piedmont, which, until 1566, formed a distinct principality belonging to the house of Doria; but is now transferred to Sardinia. Its principal productions are olive-oil and fruit. It contains, on a surface of 100 square miles, one town, fifty-one villages, and nearly 29,000 inhabitants.

ONEGLIA, a town in the north of Italy, the capital of the Piedmontese province of this name, situated on the sea coast, at the mouth of the river Impero. It has a small harbour, a population of 5000, and a traffic in wine, fruit, and olive-oil. It is partly fortified, and contains some fine churches and a gymnasium. Here the celebrated Andrew Doria was born. It is thirty-six miles E. N. E. of Nice.

ONEIDA, a county of New York, bounded north by Lewis county, east by Herkimer county, and south-west by Madison county, and west by Oswego county. Population 33,792. Chief towns, Whitesborough, Utica, and Rome.

ONEIDA, a lake, chiefly in Oneida county, is twenty miles long and four broad. It receives Wood Creek on the east end, and communicates with Lake Ontario by the Oswego. It is a very beautiful lake, abounding in fish.

ONEIDA CREEK, a river of New York, which runs north into the east end of Oneida Lake. Length twenty-five miles.

ONEIROCRITIC, *n. s.* } Gr. *ονειροκριτικός*.

ONEIROCRITICAL, *adj.* } An interpreter of dreams; interpretative of dreams.

If a man has no mind to pass by abruptly from his imagined to his real circumstances, he may employ himself in that new kind of observation which my *oneirocritical* correspondent has directed him to make. *Addison's Spectator.*

Having surveyed all ranks and professions, I do not find in any quarter of the town an *oneirocritical*, or an interpreter of dreams. *Id.*

ONERARY, *adj.* } Lat. *onero*. Fitted for
ONERATE, *v. a.* } burdens: to load or bur-
ONEROUS, *adj.* } den: burdensome.

A banished person, absent out of necessity, retains all things *onerous* to himself, as a punishment for his crime. *Ayliffe.*

ONESIÆ THERMÆ, were, according to Strabo, excellent baths, and salutary waters, at the foot of the Pyrenees in Aquitania. Near the river Adour, the ancient Atur, stands Bagneres, famous for its waters, which appear to be the Onesie of Strabo. See BAGNERES.

ONESICRITUS, a cynic philosopher and historian of Ægina, who accompanied Alexander the Great into Asia, and was sent by him to the Indian Gymnosophists. He wrote a history of Alexander's expedition, which has been censured

for the romantic and exaggerated anecdotes it contains. *Plut. in Alex. Q. Curt. ix. 10.*

ONESIMUS, a Macedonian nobleman and historian, who flourished at Rome in the third century, and was patronised by the reigning emperors. He wrote the lives of the emperors Probus and Carus with great elegance and accuracy.

ONGLEE, in heraldry, an appellation given to beasts or birds when the talons or claws are borne of a different color from that of the body of the animal.

ONGOLE, a district and town, in the Northern Carnatic, situated between 15° and 16° of N. lat. The district was formerly dependent on the Kirpa or Cudapah principality; but was afterwards incorporated with the Carnatic below the Ghauts, and subject to Arcot. The sovereignty was finally acquired by the East India Company in 1801, by treaty with the nabob; and with Nelloor, and now forms one of the collectorships, into which the Carnatic has been subdivided. It is of inferior fertility to Tanjore, and has never been remarkable for trade or manufactures. The Mussy and the Gode-gamma are the principal rivers. The chief towns are Ongole, Couchier, and Sintelsheroo. The town, formerly fortified, is 173 miles north by west from Madras.

ONLE OPPIDUM, and ONLE TEMPLUM, a town and temple, so called from Onias, the high-priest of the Jews in Egypt; who built a temple in imitation of that at Jerusalem, by permission of the king of Egypt, on the spot where stood the temple of Diana Aretis in Leontopolis; it was encompassed with a brick wall, and had a large tower like that at Jerusalem. (Josephus). It was the metropolis of the Nomos Hesiopositis (Ptolemy), because in Strabo's time Heliopolis was fallen to decay.

ONION, *n. s.* Fr. *oignon*; (Lat. *unio*?) A well known bulbous plant.

If the boy have not a woman's gift
To rain a shower of commanded tears,
An onion will do well. *Shakespeare.*
I, an ass, am onion-eyed. *Id.*
This is every cook's opinion,
No savory dish without an onion;
But, lest your kissing should be spoiled,
Your onions must be thoroughly boiled.

Swift.
Of the second division, or the onion kind, the characters, &c., the species are these, 1st. Ceps, or common onion, the best garden varieties of which are the Strasburgh or common round onion, the oval long keeping common onion, the Spanish large flat onion, &c. *Dr. A. Rees.*

ONION. See ALLIUM. Onions, leeks, and garlic, are all of the same genus; and in their recent state are acrid, but harmless to the human body. When, by age or climate, this acrimony is too great, they are not used as food. In Spain the garlic, being equally mild with the onion, is used as common food. By the ordinary culinary preparation their acrimony is dissipated, and a remarkably mild substance remains, affording much nutriment. They are used in medicine, uniting the two qualities of pectorals, viz. by their acrimony, being in their recent state expectorant; in their boiled state, on account of their

mucilage, demulcent, provided the quantity taken be sufficient. Some have found in leeks a somniferous quality; and onions are undoubtedly possessed of this property, as any person may be satisfied, by eating one or two, when wakeful in the night. Besides the three species above mentioned, there are several others belonging to the same tribe, which we use as condiment; but only the leek and onion as diet. In its recent state the onion is the most acrid; in its boiled state the leek retains its acrimony most tenaciously. On account of this, and some difference of texture, the onion is more easily digested and more universally used than the leek; being more easily broken down, and more generally agreeable.

OXION RIVER, a river of Vermont, which is formed in Cabot, passes by Montpelier, and runs west into lake Champlain, four miles northwest of Burlington, North America. It is one of the principal rivers of Vermont, and flows through a fertile country. Between Colchester and Burlington it has worn through a solid rock of lime stone, forming a chasm seventy or eighty feet deep, and at Bolton there is another similar chasm. Length seventy miles.

OMISCUS, in zoology, a genus of insects belonging to the order of aptera. It has fourteen legs, bristly feelers, and an oval body. The most remarkable species are these:—

1. *O. aquaticus*, of an ashen color, and tolerably smooth. Its body is composed of seven articulations, exclusive of the head and tail; which last part is much larger than the other segments, round at the extremity, from which issue two appendices, each divided into two threads. It has seven legs on each side; the last of which gradually increase in length, and are constantly larger than the foremost. The antennæ have but three long articulations, the last of which is much longer than the rest. This insect is found in pools, small rivulets, and especially in springs.

2. *O. armadillo* is broad, very glossy, and smooth; its color is black, with a small portion of white on the edge of the segment, which color often varies; but still the insect is glossy and smooth. Its body is composed of ten segments, besides the head and tail. Of the ten segments, the first seven are broad, and the last three short. The first of these three appears divided in the middle, which is broader than the rest, into three more. These last short segments, with that of the tail, form the extremity of the body, which is round, without any appendix, and constitutes the specific character of this insect. It has fourteen feet, seven on each side. When touched, it rolls itself up into a ball, bringing its head and tail together like the armadillo, and neither antennæ nor feet are seen: it might be taken for a round shining pearl. It is found in woods.

3. *O. asellus*, millepeæ, or wood-louse, is oval; the tail obtuse, with two undivided bristles; various as to color; length, five lines.

4. *O. entomon*, the sea wood-louse, is white; eyes black; convex above, beneath flat, margin acute; antennæ four; four hind pair of legs largest, hairy. Body of ten segments. Length one line and a half. Found on the coast. It accompanies the herring, and is an enemy well known

to our fishermen: these insects will frequently eat up a whole fish while it hangs in the net.

ONKELOS, surnamed the Proselyte, a famous rabbi of the first century, and the author of the Chaldee Targum on the Pentateuch. He flourished in the time of Jesus Christ, according to the Jewish writers. The Talmudists tell us that he assisted at the funeral of Gamaliel, and was at a very large expense to make it magnificent.

ONLY, *adj. & adv.* From one. Single; sole; this, emphatically: one-like; simply; singly; merely; so and no otherwise.

Every imagination of the thoughts of his heart was *only* evil continually. *Genesis*, vi. 5.

The *only* child of shadeful Saverlake. *Dryden*.

The posterity of the wicked inherit the fruit of their father's vices; and that not *only* by a just judgment, but from the natural course of things. *Tillotson*.

All who deserve his love, he makes his own; And, to be loved himself, needs *only* to be known. *Dryden*.

Of all whom fortune to my sword did bring, This *only* man was worth the conquering. *Id.*

The logic now in use has long possessed the chair, as the *only* art taught in the schools for the direction of the mind in the study of the sciences. *Locke*.

I propose my thoughts *only* as conjectures. *Burnet*.

Nor must this contrition be exercised by us *only* for grosser evils; but when we live the best. *Wake*.

To maintain a character then with decency, we must keep our eye *only* upon that which is proper to it. *Mason*.

Can you resolve on shame? that *only* ill The generous fear that kills the soul itself. *Thomson*.

By numbers here from shame or censure free, All crimes are safe, but hated poverty. This, *only* this, the rigid law pursues; This, *only* this, provokes the snarling muse. *Johnson*.

Arts once esteemed may be with shame dismissed; Charity may relax the miser's fist; The gamester may have cast his cards away, Forgotten to curse, and *only* kneel to pray. *Cowper*.

ONOMACRITUS, an Athenian soothsayer who flourished under Pisistratus and his sons, about A. A. C. 516. He is generally believed to have been the author of the Greek poem on the Expedition of the Argonauts, which bears the name of Orpheus; as well as of the elegant poems still extant under the name of Musæus. He was exiled by Hipparchus. *Herod.* vii. 6.

ON'OMANCY, *n. s.* } *Gr. ονομα*, name and
ONOMANTICAL. } *μαντις*, divination.
Prediction by names.

Destinies were superstitiously, by *onomancy*, deciphered out of names, as though the names and natures of men were suitable, and fatal necessities concurred herein with voluntary motion. *Camden*.

Theodatus, when curious to know the success of his wars against the Romans, an *onomantical* or name-wisard Jew, willed him to shut up a number of swine, and give some of them Roman names, others Gothic names with several marks, and there to leave them. *Camden*.

ONOMANCY, **ONOMANTIA**, or **ONOMANCIA**, a branch of divination, which foretels the good or bad fortune of a man from the letters in his name. From the same principle the young Romans drank to their mistresses as often as

there were letters in their names: hence Martial says, *Naevia sex cyathis, septem Justina bibatur*.

ONON, a river of Asiatic Russia, on the frontier of Chinese Tartary. It rises in a mountainous country, and flows north-east till, combined with the Ingoda, it forms the Chilka, which afterwards discharges itself into the Amour. Its waters abound in fish, and throw on shore fragments of cornelian, chalcedony, and jasper. The banks are chiefly occupied by tribes of wandering Bannats, Tunguses, &c.

ONONDAGA, a county of New York, bounded north by Oswego county, east by Madison county, south by Courtland county, and west by Cayuga county. Population 25,987.

ONONDAGA, a post town, the capital of Onondaga county, New York, fifty miles west of Utica, 145 west of Albany. It is a large, valuable, and flourishing town, and has two villages, Onondaga Hollow, and West Hill. The latter, which is two miles west of the former, contains a court house, a jail, printing-office, &c. Onondaga Hollow contains a state arsenal, an academy, a meeting-house, a printing-office, and considerable manufactures. 200 of the Onondaga Indians live three miles south of this village; 200 of the same tribe reside on Buffalo Creek, 100 on the Alleghany, and 100 on the Ouse, in Upper Canada.

ONONDAGA, or Salt Lake, a lake in Onondaga county; seven miles north of Onondaga; seven miles long, and two broad. It discharges its waters from the north end into Seneca River. On its borders are celebrated salt springs.

ONONIS, in botany, a genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the thirty-second order, papilionaceæ. The calyx is quinquepartite, with the segments linear; the vexillum striated; the legumen turgid and sessile; the filaments coalited without a fissure.

ONOPORDUM, woolly thistle, in botany, a genus of the polygamia æqualis order, belonging to the syngenesia class of plants; and in the natural method ranking under the forty-ninth order, compositæ. The receptacle is honey-combed; the scales of the calyx mucronated or pointed.

ONORE, or HONAVUR, a sea-port of North Canara, Hindostan, standing at the mouth of a small river which communicates with a fine salt water lake. This lake extends nearly as far to the east as the foot of the mountains, and is studded with islands. The fish are salted by the natives, and form a considerable article of trade. The country also produces much pepper and rice. Ships may anchor to the south of Fortified Island, at the distance of one mile and a half, or two miles, from the shore, in five or six fathoms water. Onore, when the Portuguese first arrived in India, was the seat of an independent rajah, whom they subdued, and built a fortress here. It was subsequently taken from them by the Dutch, who relinquished it; for in 1763 it was taken by Hyder Aly, and then considered one of the possessions of the ranees of Bednore. Hyder caused docks to be erected here for the purpose of building ships of war;

but in the year 1768 it was taken by the British, and the buildings destroyed; shortly after which it was retaken by Hyder. In 1783 it was retaken by the British under general Matthews, who found five ships of war, and a number of small vessels; but it was restored to Tippoo on the conclusion of the peace. The sultan, convinced of the impracticability of forming a marine at that place, withdrew the artificers, and, with the province of Canara, it came into British possession in 1799.

ONOSANDER, a Greek author and Platonic philosopher, who wrote Commentaries on Plato's politics, which are lost; but particularly famous for a treatise entitled *Λογος Στρατηγικος*, 'Of the Duty and Virtues of the General of an Army;' which has been translated into Italian, Spanish, and French. The time when he lived is not precisely known; but is imagined to have been in the reign of Claudius I.

ONOSMA, in botany, a genus of the monocynia order, belonging to the pentandria class of plants; and in the natural method ranking under the forty-first order, asperifoliæ. The corolla is campanulated, with the throat pærvous: there are four seeds.

ON'SET, *n. s. & v. a.* On and set. A set on; attack; assault; first brunt: to assault.

As well the soldier dieth, which standeth still, as he that gives the bravest onset. *Sidney.*

All breathless, weary, faint,
Him spying, with fresh onset he assailed,
And kindling new his courage, seeming quaint,
Struck him so hugely, that through great restraint.
He made him stoop. *Spenser.*

I will with deeds requite thy gentleness;
And for an onset, Titus, to advance
Thy name and honourable family,
Lavinia will I make my empress. *Shakespeare.*

This for a while was hotly unsettled and a reasonable price offered, but soon cooled again. *Carew.*

The shout
Of battle now began, and rushing sound
Of onset. *Milton's Paradise Lost.*

Sometimes it gains a point; and presently it finds itself baffled and beaten off; yet still it renews the onset; attacks the difficulty afresh; plants this reasoning and that argument, like so many intellectual batteries, till at length it forces a way into the obstinate enclosed truth. *South.*

Without men and provisions it is impossible to secure conquests that are made in the first onsets of an invasion. *Addison.*

Observe
The first impetuous onsets of his grief;
Use every artifice to keep him stedfast. *Philips.*

ON'SLAUGHT, *n. s.* On and slay. See SLAUGHTER. Attack; storm; onset. Not in use.

They made a halt
To view the ground, and where t' assault,
Then called a council, which was best,
By siege or onslaught to invest
The enemy; and 'twas agreed
By storm and onslaught to proceed. *Hudibras.*

ONSLow, a county, south part of North Carolina, on the coast. Population 6669. Slaves 2299. Chief town Swansborough.

ONTARIO, LAKE, one of that great northern chain which divides the United States from

Upper Canada. In length it is 171 miles, its greatest breadth fifty-nine and a half, and it is 467 in circumference; the depth of water varies, but it is seldom less than three, or more than fifty fathoms, except in the middle, where attempts have been made with 300 fathoms, without striking. Its bearing is nearly east and west. Towards the south and in the north-east the shores are low and marshy; to the north and north-west they assume a lofty character. The country around is covered with wood, except where patches of settlements diversify the scene. Of the many rivers flowing into Lake Ontario there are none that lay claim to notice but the Genesee and Oswego: but there are some fine bays and inlets. Burlington Bay is both spacious and secure; but its entrance is narrow, and so shallow as to admit nothing larger than boats. Hungry Bay, on the contrary, affords good anchorage and safe shelter among the islands, to ships of the largest size. York and Kingston harbours, belonging to the English, and Sacket's harbour to the Americans, are unquestionably the best upon the lake. The two latter are strongly fortified. Very heavy squalls of wind occur here, but they are unattended either with difficulty or danger. Of the many islands at the east end the Grand Isle, which lies immediately at the outlet of the lake into the St. Lawrence, is the most considerable: and, below this, the islands are so numerous in the channel of the St. Lawrence that they have received the appellation of the Thousand Isles. The Ontario lake discharges its waters into the St. Lawrence from the north-east end, and communicates with Lake Erie at the south-west part, by the Niagara. Long. 76° 30' to 80° W., lat. 43° 15' to 44° N.

ONTARIO, a county of New York, bounded north by the above lake, east by Seneca county, south by Steuben and Allegany counties, and west by Genesee county. Canadoqua is the capital. Also a county of Upper Canada, consisting of islands in Lake Ontario.

ONTIGOLA, a well-built village of Spain, three miles east of Aranjuez, on a small lake of the same name. The foreign envoys reside here, when the court is at Aranjuez.

ONTINIENTE, a considerable manufacturing town of Valencia, Spain, is situated in a mountainous and fertile neighbourhood. It is an inland place, twelve miles south-west of the town of San Felipe; than which, though nearly as populous, as it contains about 11,000 inhabitants, it is much less known, from being unfortified and distant from any sea-port. Its inhabitants carry on manufactures of woollen, paper, and copper. The variety of temperature gives rise to a considerable diversity in the fruits, the lower grounds producing figs; the higher pears, apples, and other products of a colder climate.

ONTOLOGY, *n. s.* } *Gr. ontologia.* The
ONTOLOGIST. } science of the general
 affections of being. **METAPHYSICS**, which see.

The modes, accidents, and relations that belong to various beings, are copiously treated of in metaphysics, or more properly *ontology*. *Watts's Logic.*

Others, with more propriety, conceive metaphysics

to be what some others call *ontology*, or *ontosophy*.
i. e. the doctrine de ente, or of being, quatenus being.
Dr. A. Rees.

ONUPHRIUS PANVINUS, a learned Italian, of the order of hermits of St. Augustine. He was born of a noble family at Verona in 1529; and became so indefatigable in his studies that he spent whole days and nights in reading the ancients; which made Manutius style him *Helluo Antiquitatis*. His first performance was *A Chronicle of Popes and Cardinals*, which was printed without his knowledge at Venice in 1557, and some time after more correctly by himself. He afterwards continued *Platina's Lives of the Popes*, from Sextus IV. to Pius V., and subjoined annotations. He also wrote four pieces upon Roman Antiquities, which are printed in Grævius's Collection. He died in his thirty-ninth year in 1568.

ONYCHA, *n. s.* *Gr. ονυχα.* A fragrant gum. See below.

Take sweet spices, *onycha*, and galbanum. *Exodus.*

ONYCOMANCY, or **ONYMANCY**, a kind of divination by the nails of the fingers. The word is from the Greek *ονυξ*, nail, and *μαντια*, divination. The ancient practice was to rub the nails of a youth with oil and soot, or wax; and to hold up the nails thus smeared against the sun. Upon them were supposed to appear figures or characters which showed the thing required.

O'NYX, *n. s.* *Gr. ονυξ.* A gum. See below.

Nor are her rare endowments to be sold
 For glittering sand by Ophir shown,
 The blue-eyed saphir, or rich *onyx* stone.

Sandys.

The *onyx* is an accidental variety of the agate kind: it is of a dark horny colour, in which is a plate of a bluish white, and sometimes of red: when on one or both sides the white there happens to lie also a plate of a reddish or fresh colour, the jewellers call the stone a *sardonix*. *Woodward on Fossils.*

ONYX, in lithology, one of the semipellucid gems, with variously colored zones, but none red. There are four varieties of this gem. 1. A bluish white one, with broad white zones: 2. A very pure onyx, with snow-white veins: 3. The *jasponyx*, or *horny onyx*, with green zones: 4. The brown onyx, with bluish white zones. The ancients attributed wonderful properties to the onyx, and imagined that if worn on the finger it acted as a cardiac; they also recommended it as an astringent; but at present no regard is paid to it. The word *ονυξ* signifies nail; the poets feigning this stone to have been formed by the *Parcæ* from a piece of *Venus's* nail, cut off by *Cupid* with one of his arrows.

ONYX, in ichthyology, or the *onyx* fish, found in the Red Sea, and has the property of being uncommonly odoriferous, whence it is a principal ingredient in the Indian perfumes. We have met with no description of it.

OOCHINADROOG, **UJAYINI DURGA**, a strong hill fort in the Balaghaut territories, district of Harponully. Lat. 14° 32' N., long. 75° 55' E. This fortress is situated about twelve miles to the eastward of Hurryhur, and has the appearance of great strength; being of consider-

able height, unconnected and abrupt, particularly to the northward and westward, where it is almost perpendicular. When Tippoo besieged a rebel Hindoo chief here in 1793 he was so enraged at the garrison holding out for three months that on its capitulating he ordered all the boys to be made eunuchs: very few, it is said, survived.

OOJAIN, OJJEIN, or UGEEN, a large district and city of Hindostan, in the province of Malwah, situated between 23° and 24° N. lat., and between 75° and 77° E. long. The soil is in general a soft black mould, and the roads are nearly impassable in the wet season. It contains, besides the city, 175 villages; but most of the lands are let on a feudal tenure, and it only yields a revenue of about £60,000 per annum. It was formerly the private estate of the Mahratta Dowlut Row Sindia. The capital is situated on the banks of the Sipperah, in lat. 23° 12' N., long. 75° 50' E., and is one of the most ancient cities of Hindostan. It was known to the Greeks as Ozene; and its Sanscrit name is Ujayini. It is stated to have been the capital of rajah Bickermajit, a short time after the commencement of the Christian era. The ancient city stood about a mile north of the present; and perhaps was much larger; for, on digging to the depth of fifteen feet, brick walls, pillars of stone, and other ruins, are frequently discovered here. Adjoining to these ruins, near the bank of the river, is the remarkable cavern rajah Bhirtery's cave. It consists of a long gallery, supported by pillars, with chambers on each side containing a number of figures carved on the granite walls. At some distance, and in an island of the river, there is a subterranean palace, built about the year 1500, by sultan Nasir Addeen Khilije, king of Malebah, who, having contracted an intolerable heat of constitution by the use of mercury, used to spend the hot season of the year in this place, around every apartment of which the water flowed in various channels. The fine state of these works, now above 300 years old, is surprising.

The modern Oojain is of an oblong form, about six miles in circumference, surrounded by a stone wall with towers. The principal bazaar is a spacious and regular street, paved with stone, and having houses of two stories in height on each side. The houses are generally built of brick, and tiled. The whole of the lower story is laid out in shops; the upper ones are dwellings. The principal buildings in the town are the mosques and temples. The palace makes but a poor figure. The southern quarter, called Jeyasingpoor, contains an observatory erected by rajah Jyasing of Jyenagur. See our article **OBSERVATORY**. Two miles from the city the late Mahadajee Sindia laid the foundation of an extensive fort, citadel, and palace; but his death put a stop to the works.

OON, a town of Hindostan, in the province of Gujerat, noted for the thievish disposition of its inhabitants, who are mostly of the lowest classes of Hindoos. It contains about 2000 tolerable houses, and the palace of the rajah. The chief is a Hindoo of the low tribe of Coolee: his income is said to amount to 12,000 rupees per

annum; a moiety of which is supposed to be derived from his share of the plunder of his neighbours. Long, 71° 45' E., lat. 24° 15' N.

OORT (Adam Van), the son of Lambert Van Oort, a painter of considerable reputation for perspective and architecture, was born at Antwerp in 1557. He was instructed in the art by his father, and soon rose into esteem, not only as a painter of history, but of landscape and portraits. But the greatest honor of Van Oort is, that he was the first instructor of Rubens, whose works have eternised his master's memory, along with his own. He painted a great number of designs for the altars of churches in Flanders, which have much merit, and are still beheld with pleasure by good judges. He was a mannerist.

OOSCAT, a town of Anatolia, in Asia Minor. It has been almost entirely rebuilt in modern times. It is situated in a hollow, surrounded on all sides by barren hills, but is said to contain 16,000 inhabitants, of which the greater proportion are Turks; the remainder are Greeks, Armenians, and Jews. The houses, though small, are neat and painted in the manner of those at Constantinople. The palace is an extensive building of brick and wood, two stories high, in the centre of the town. A handsome mosque has lately been erected of hewn stone, in imitation of St. Sophia. The defences consist of a slight wall, built of sun-dried brick and mud; and in certain open spots large wooden granaries have been erected. 110 miles east of Angora. Lat. 39° 42' N.

OOSCOTTA, a small fortress of the south of India, province of Mysore. We first read of this place in 1688, when it was in possession of the Mahrattas. In 1757 it was taken from them by the nabob of Cuddapah, but retaken by the Mahrattas. In 1761 it was besieged and taken by Hyder Aly and the brother of the Nizam. Seven years after this the British got possession of it; but in 1773 it was recovered by Hyder. The events of the war of 1799 again threw it into our hands, by whom it was made over, along with the province, to the young rajah of Mysore. It is a place of considerable strength, and stands fifteen miles north-east of Bangalore.

OOST (James Van), a painter of history, landscape, and architecture, born at Bruges about 1600. He learned the art in his native city, but travelled to Italy to study the works of the great masters. Among these he attached himself particularly to the style of Annibal Carracci, and imitated him in such a manner as to surprise the most able connoisseurs at Rome. He died in 1671.

OOZE, *n. s. & v. n.* } Saxon *per*, wetness.
Oo'ze, adj. } Mud or mire in a soft state; slime: hence, soft flow; to flow softly; drain away.

My son i' the' *ooze* is bedded. *Shakespeare.*
 Some carried up into their grounds the *ooze* of salt water mud, and found good profit thereby.

Carrow.
 Old father Thames raised up his reverend head,
 Deep in his *ooze* he sought his sedge bed,
 And shrunk his waters back into his urn. *Dryden.*
 When the contracted limbs were cramped, even then

A waterish humour swelled and *oozed* agen. *Id.*

From his first fountain and beginning ooze,
Down to the sea each brook and torrent flows.

Prior.

From his oozy bed,
Old father Thames raised up his reverend head.

Pope.

The lily drinks
The latent rill, scarce oozing thro' the grass.

Thomson.

At once he darts along
Deep struck, and runs out all the lengthened line,
Then seeks the furthest ooze and sheltering weed,
The caverned bank, his old secure abode. Id.
Laughs the glad Thames, and clasps each fair
one's charms,
They scream and scramble in his oozy arms.

Canning.

OPA'CATE, *v. a.* } Lat. *opaco*. To shade;
OPA'CITY, *n. s.* } cloud; obscure: opacity
OPA'COUS, *adj.* } is, cloudiness; darkness;
OPAQUE. } want of transparency; and
opacous, opaque, the corresponding adjectives.

When he perceives that *opacous* bodies do not
hinder the eye from judging light to have an equal
diffusion through the whole place that it irradiates,
he can have no difficulty to allow air, that is dia-
phaneous, and more subtle far than they, and conse-
quently divisible into lesser atoms; and having
lesser pores, gives less scope to our eyes to miss light.

Digby.

Upon the firm *opacous* globe
Of this round world, whose first convex divides
The luminous inferior orbs, inclosed
From chaos, and the' inroad of darkness old,
Satan alighted. Milton's Paradise Lost.

They

Shot upward still direct, whence no way round
Shadow from body *opaque* can fall. Milton.
Can any thing escape eyes in whose optics there
is no *opacity*? Browns.

Had there not been any night, shadow, or *opacity*,
we should never have had any determinate conceit
of darkness. Glanville.

How much any body hath of colour, so much hath
it of *opacity*, and by so much the more unfit is it to
transmit the species. Ray.

The least parts of almost all bodies are in some
measure transparent; and the *opacity* of those bodies
ariseeth from the multitude of reflexions caused in
their internal parts. Newton.

These disappearing fixt stars were actually extin-
guished and turned into more *opaque* and gross plan-
et-like bodies. Cheyne.

In a great work there is a vicissitude of luminous
and *opaque* parts, as there is in the world a succes-
sion of day and night. Johnson.

The whole of the choroides is *opaque*, by which
means no light is allowed to enter into the eye, but
what passes through the pupil. To render this
opacity more perfect, and the chamber of the eye still
darker, the posterior surface of this membrane is cov-
ered all over with a black mucus, called the *pigmen-
tum nigrum*. Imison.

OPAL, *n. s.* Lat. *opalus*. A kind of gem.
See below.

Thy mind is a very *opal*.

Shakspeare. Twelfth Night.

The' empyreal heaven, extended wide
In circuit, undetermined square or round;
With *opal* towers, and battlements adorned
Of living saphir. Milton's Paradise Lost.

We have this stone from Germany, and it is
some with the *opal* of the ancients. Woodward.

OPAL, in mineralogy, a sub-species of the
indivisible quartz of Mohs. See MINERALOGY.
Of this stone there are six different kinds, as
follows:—

1. Precious opal. Color milk-white, inclin-
ing to blue. It exhibits a beautiful play of
many colors. Massive, disseminated, in plates
and veins. Lustre splendid. Fracture perfect
conchoidal. Translucent, or semitransparent.
Semi-hard in a high degree. Brittle. Uncom-
monly easily frangible. Specific gravity 2.1.
Before the blow-pipe it whitens and becomes
opaque, but does not fuse. Its constituents are,
silica 90, water 10. It occurs in small veins in
clay porphyry, with semi-opal, at Czscherwenitz,
in Upper Hungary; and in trap rocks at Sandy
Brae, in the north of Ireland. Some of them
become transparent by immersion in water; and
are called *oculus mundi*, *hydrophane*, or *change-
able opal*.

2. Common opal. Color milk-white. Mas-
sive, disseminated, and in angular pieces. Lus-
tre splendid. Fracture perfect conchoidal.
Semitransparent. Scratches glass. Brittle.
Adheres to the tongue. Infusible. Its constitu-
ents are, according to Klaproth, silica 93.5, oxide
of iron 1, water 5. It occurs in veins along
with precious opal in clay porphyry, and in me-
talliferous veins in Cornwall, Iceland, and the
north of Ireland.

3. Fire opal. Color hyacinth-red. Lustre
splendent. In distinct concretions. Fracture
perfect conchoidal. Completely transparent.
Hard. Uncommonly easily frangible. Specific
gravity 2.12. Heat changes the color to pale
flesh-red. Its constituents are, silica 92, water
7.75, iron 0.25. It has been found only at
Zimapan in Mexico, in a particular variety of
hornstone porphyry.

4. Semi-opal. Colors white, gray, and brown;
sometimes in spotted, striped, or clouded deli-
neations. Massive, disseminated, and in imita-
tive shapes. Lustre glistening. Fracture con-
choidal. Translucent. Semi-hard. Rather
easily frangible. Specific gravity 2.0. Infusi-
ble. Its constituents are, silica 85, alumina 3,
oxide of iron 1.75, carbon 5, ammoniacal water
8, bituminous oil 0.33.—Klaproth. It occurs
in porphyry and amygdaloid, in Greenland,
Iceland, and Scotland, in the Isle of Rume, &c.

5. Jasper opal, or Ferruginous opal. Color
scarlet-red, and gray. Massive. Lustre shining.
Fracture perfect conchoidal. Opaque. Between
hard and semi-hard. Easily frangible. Specific
gravity 2.0. Infusible. Its constituents are,
silica 43.5, oxide of iron 47.0, water 7.5.—
Klaproth. It is found in porphyry at Tokay in
Hungary.

6. Wood opal. Colors very various. In
branched pieces and stems. Lustre shining.
Fracture conchoidal. Translucent. Semihard
in a high degree. Easily frangible. Specific
gravity 2.1. It is found in alluvial land at
Zastravia in Hungary. Opals are generally dis-
covered in detached pieces, in an envelop of a
different kind of stone, from the size of a pin's
head to that of a walnut. Beautiful opals of
this last size are extremely rare: so that it is
difficult to find an opal sufficiently perfect and

large to be completely possessed of all its beauties. This renders it so precious, and makes it indeed almost impossible to determine its value. It has, however, we believe, been agreed to estimate a beautiful oriental opal at double the price of a sapphire of the same dimensions.

The Russian general, Prince Potemkin, purchased, for the sum of 1000 ducats, a stone of this kind, said to have been taken by the famous Nadir Shah from the head of a Gentoo idol, of which it formed one of the eyes. By what circuitous road it found its way to the Russian prince does not appear: but it is said to have disappeared, together with many other gems, from the tent of the Persian conqueror, when he was assassinated. It is related that Nonnius, a Roman senator, seemed willing rather to forfeit his life than to cede an opal to Marc Antony.

Opal, says Mr. Jameson, which is a hydrate of silica, and eminently distinguished by the beauty of its range of external characters, occurs in small veins and imbedded portions, in various primitive rocks. But its principal distribution is in rocks of the secondary class, particularly in traps and porphyries. In these it is arranged in veins, drusy cavities, and imbedded masses, and assumes the various forms of precious opal, common opal, semi-opal, wood-opal, and menilite. The menilite and wood-opal are the most modern of these,—the first occurring imbedded in the adhesive slate of the Paris formation, the other in tuffaceous rocks, of the nature of trachyte. The opals are found sometimes so soft that they can be flattened between the fingers. The alluvial rocks are not without opal, for it is daily forming by deposition from the waters of various springs, particularly hot springs, as those of Iceland. From the magnitude and abundance of these springs, in many regions of the earth, and the quantity of siliceous matter they deposit, we can form a general estimate of the great quantity of opaline matter formed in this way. Opal indeed is one of those minerals which have an extensive geognostical range, and which are still forming in the mineral kingdom; but one of the most interesting features in its natural history remains to be noticed, viz. its formation by the organic powers of plants. It is well known to botanists that silica occurs in considerable abundance in several tribes of plants, and that it communicates to the parts of the plants containing it a considerable degree of hardness. The bamboo is one of the most remarkable in this respect, as the earth it contains occurs not only in the vegetable structure itself, but is secreted from it, and appears in the joints of the plant, in solid masses, named *Tabasheer*, and which bear a strong resemblance to opal.

The most celebrated locality for opals is the village named *Cservenicza* by the Slavonians, about two miles from *Kaschau*, in the trachytic range, which extends from *Tokoj* to *Epériés*. It appears that these mines have been wrought for many ages; for *Fichtel* asserts that, in the archives of *Kaschau*, there exist papers which mention that, in the year 1400, there were 300 workmen employed in the country of *Cservenitza*,

as well for the working of opal as for that of mercury. At the present day there are not more than thirty, but the working begins to be conducted with regularity.

The varieties which are most abundant are, the opaque opal, of a yellowish or reddish white, and the milky opal, which is more or less translucent. The latter becomes sometimes more or less dull, and assumes the characters of certain whitish menilite of the neighbourhood of Paris. The fire-opal, of a beautiful topaz yellow-color, with great lustre, and equally beautiful with that which *M. De Humboldt* discovered at Mexico, is still pretty common; but the small masses in which it occurs are very much cracked, and it becomes almost impossible to cut them: it would, however, be a very beautiful stone, were it possible to procure pieces of tolerable size free of fissures. It appears that the yellow color is owing to iron; for this stone blackens quickly before the blowpipe. It is probable that the metal is here in the state of a hydrate, for it is thus that it occurs in the fissures of the rock where it is deposited by itself. Limpid opal, without color, occurs pretty frequently in the interior of small geodes, the mass of which consists of opaque or milky opal; it forms an undulated crust of greater or less thickness, which passes gradually into the preceding layer. Sometimes it occurs by itself in minute fissures; and at other times it is interposed in small layers in the substance of various kinds of opal. Stalactitic opal (*l'opal concretionnée*), transparent, translucent, or opaque, is still found in certain fissures of which it lines the walls, or in geodes; these are composed of small stalactites, which adhere more or less firmly to one another, and which, when limpid, differ in no respect from hyalite. They also assume a pearly lustre; when slightly heated, lose their coherence; and break into small scales when exposed to a red heat. Their aggregation gives rise to masses which have the appearance of being homogeneous, and present the aspect of opals similar to some one of the varieties already mentioned, and even to the iridescent opal. Sometimes the stalactites are extremely minute, and completely fill up the irregular cavities; the small fissures by which the siliceous matter has penetrated into the rock being equally filled.

In some instances, the opaline matter has formed on the walls of the fissures only a very thin layer, which presents the appearance of minute tortuous canals, having their surface covered with very minute stalactitic points lying lengthwise. These surfaces often present the aspect of certain earthy pumices, with elongated and tortuous vesicular cavities. Iridescent opal (*l'opale irisée*), which is the principal object of research, is also plentifully disseminated in the rocks, but almost always in extremely minute nests; it is very rarely that it occurs in large pieces, like the other varieties. The working sometimes goes on for years before a piece occurs of the size of a twenty sous piece. The largest which has ever been found is that of the imperial cabinet of Vienna; it is of the size of one's fist, and weighs seventeen ounces. This magnificent specimen has been known at Vienna

for more than two centuries, and it is neither known at what period, nor how it was obtained. It is polished irregularly to avoid diminishing its size. There are many fissures in it, and it is not completely disengaged from the matrix. The colors presented by this kind of opal are extremely various; all the tints of blue, violet, red, yellow, green, &c., are blended in a thousand different ways, and present the most brilliant and agreeable reflections. This beautiful stone is also in great request, and always maintains a high price; the smallest, when beautiful, do not sell for less than four to five guineas; and, when the dimensions are large, the value augments altogether beyond proportion. There is a very beautiful specimen at Kaschaa, of the size of a small crown piece, for which 30,000 florins (or 79,000 francs) were offered.

The iridescent colors presented by opal are not assuredly owing to cracks or fissures, as has sometimes been said; for there is not the least appearance of fissure to be seen in the most beautiful specimens; the smallest fragments into which a piece may be broken present exactly the same play of light as the largest. This play of light is explained, in a less forced manner, by the unequal distribution of vacuities, of different sizes, in which water is found enclosed; it is easy, from the colors observed, to estimate the size, or rather the degree of minuteness, of these vacuities, proceeding upon the Newtonian theory of colored rings.

Ferruginous opal also occurs pretty frequently in the same veins as the other varieties: it is impregnated with a greater or less quantity of hydrate of iron, which has probably been simultaneously deposited, or into which the siliceous matter may have been subsequently infiltrated. Sometimes the appearance is that of a dull opaque opal, slightly colored with yellow; but we find, in the same nests, the quantity of iron augmenting by little and little, and often we find nothing but an opal-jasper. Sometimes the iron becomes so abundant that the opaline matter discovers itself only by the resinous lustre which it communicates to the mass.

Opaque opal, more or less colored, and opal-jasper, by impregnating wood buried in the midst of pumiceous debris, have given rise to opalised wood (Holzopal, Wern.), which, as we know, presents a great variety of colors, and degrees of lustre. It is evident that the wood, in this case, has merely served as the receptacle of the siliceous matter which has been successively infiltrated, and in the same manner as it has formed in kidneys in the same conglomerates, or been deposited in the fissures of rocks. The organic nature of the bodies for which the silica has been substituted, in this case, has had no sort of influence on the modification which reduces it to the state of opal, since it presents itself with the same characters, in nests or in veins, in the neighbouring parts where no organic debris is found to receive it. A single difference that is observed here, and which still proves that the petrification is owing to the infiltration of siliceous matter, is, that this is in some measure pure, and is found disengaged

from extraneous matter as by a filter. The greater part also of the opalised wood which has been collected has a more or less determinate translucidity; the matter is commonly harder, and, whatever the color may be, the powder does not stain the fingers like that of the ferruginous opal-jaspers. Sometimes perfectly transparent opal is observed in the cavities of wood, in small undulated nests, or in stalactites.

The colors which these opalised woods present are extremely numerous; sometimes they are absolutely white, and sometimes they assume very deep colors, yellow, red, brown, green, as well as all the intermediate tints, resulting from the mixture of these principal colors. The same piece of wood, if it be of considerable size, as sometimes happens, presents colors altogether different in their different parts, as well as more or less translucidity or opacity. In many cases the texture of the wood is completely preserved; and, when the color is also retained in an equal degree, it is impossible to distinguish by mere inspection the petrified specimens from those which are in their original unaltered state.

OPARO, a mountainous island in the Pacific Ocean, discovered by Vancouver in December 1791. Its high craggy mountains form most romantic pinnacles, with perpendicular cliffs, and the vacancies between may more properly be termed chasms than valleys, as they have no appearance of cultivation or fertility; and are chiefly clothed with shrubs and dwarf trees. On all of them people were observed, as if on duty, constantly moving about. Captain Vancouver saw about thirty double and single canoes, which were mostly built after the model of those in the Society Islands. The natives he estimated at 1500, who appeared to be extremely well fed. Long 215° 58' E., lat. 27° 36' S.

OPE, or

O'PEN, *v. a.*, *v. n.*, & *adj.*

O'PENER, *n. s.*

OPENEYED', *adv.*

OPENHAND'ED, *adj.*

OPENHEART'ED, *adj.*

O'PENHEARTEDNESS, *n. s.*

O'PENING, *n. s.*

O'PENLY, *adj.*

OPENMOUTH'ED, *adj.*

O'PENNESS, *n. s.*

Sax. *ope*, open; Gothic and Belgic *open*; Swed. *open*. To uncloise; uncover; divide; unlock; show; explain; disclose: to uncloise itself; not to remain close or concealed; to bark (a hunting term): as an adjective, unclosed; plain; apparent; public; clear: the compounds and derivatives follow these senses.

If a man shall open a pit and not cover it, and an ox fall therein, the owner of the pit shall make it good. *Eccodus* xxi. 33.

The eyes of the Lord are upon the righteous, and his ears are open unto their cry. *Psalms* xxxiv.

If Demetrius and the craftsmen have a matter against any man, the law is open, and there are deputies; let them implead one another. *Acts* xix.

He was so secret therein, as not daring to be open, that to no creature he ever spake of it. *Sidney*.

Some things wisdom openeth by the sacred books of Scripture, some things by the glorious works of nature. *Hooker*.

Prayers are faulty, not whensoever they be openly made, but when hypocrisy is the cause of open praying. *Id.*

The world's mine oyster,
Which I with sword will open. *Shakespeare.*
If I cry out thus upon no trail, never trust me
when I open again. *Id. Merry Wives of Windsor.*
The gates are open; now prove good seconds;
'Tis for the followers fortune widens them,
Not for the fiers. *Id. Coriolanus.*

The service that I truly did his life,
Hath left me open to all injuries. *Shakespeare.*
Deliver with more openness your answers
To my demands. *Id. Cymbeline.*
Why should you have put me to deny
This claim which now you wear so openly?
Shakespeare.

To us, the' imagined voice of heaven itself;
The very opener and intelligencer
Between the grace, the sanctities of heaven,
And our dull workings. *Id. Henry IV.*

While you here do snoring lie,
Open-eyed conspiracy
His time doth take. *Id. Tempest.*
An open and warm winter portendeth a hot and
dry summer. *Bacon's Natural History.*

Lord Cordes, the hotter he was against the English
in time of war, had the more credit in a negotiation
of peace; and besides was held a man open and of
good faith. *Bacon.*

After the earl of Lincoln was slain, the king opened
himself to some of his council, that he was sorry for
the earl's death, because by him he might have known
the bottom of his danger. *Id.*

He irefully enraged would needs to open arms.
Drayton.

Gramont, governor of Bayonne, took an exquisite
notice of their persons and behaviour, and opened
himself to some of his train, that he thought them to
be gentlemen of much more worth than their habits
betrayed. *Wotton.*

The English did adventure far for to open the
north parts of America.

Abbot's Description of the World.
The under-work, transparent, shews too plain:
Where open acts accuse, the' excuse is vain. *Daniel.*
Adam, now open thine eyes; and first behold
The' effects which thy original crime hath wrought
In some to spring from thee. *Milton's Paradise Lost.*

True opener of mine eyes,
Much better seems this vision, and more hope
Of peaceful days portends, than those two past.
Milton.

I knew the time,
Now full, that I no more should live obscure,
But openly begin, as best becomes
The authority which I derived from heaven. *Id.*
The draw-bridges at Amsterdam part in the middle,
and a vessel, though under sail, may pass them with-
out the help of any one on shore; for the mast-head,
or breakwater of the ship, bearing against the bridge
in the middle, opens it. *Browne.*

There may be such openers of compound bodies,
because there wanted not some experiments in which
it appeared. *Boyle.*

How grossly and openly do many of us contradict
the precepts of the gospel, by our ungodliness and
worldly lusts! *Tillotson.*

The night restores our actions done by day;
As hounds in sleep will open for their prey.
Dryden.

You retained him only for the opening of your
cause, and your main lawyer is yet behind. *Id.*

With dry eyes, and with an open look,
She met his glance midway. *Id. Boccaccio.*

Darah
Too openly does love and hatred show:
A bounteous master, but a deadly foe. *Dryden.*

They meet the chiefs returning from the fight,
And each with open arms embraced her chosen
knight. *Id.*

I know him well; he's free and openhearted. *Id.*
Up comes a lion openmouthed towards the ass.

L'Estrange.
Moral principles require reasoning and discourse
to discover the certainty of their truths; they lie not
open as natural characters engraven on the mind.
Locke.

God has been pleased to dissipate this confusion
and chaos, and to give us some openings, some dawn-
ings of liberty and settlement. *South's Sermons.*

In that little spot of ground, that lies between
those two great oceans of eternity, we are to exercise
our thoughts, and lay open the treasures of the divine
wisdom and goodness hid in this part of nature and
providence. *Burnet.*

Good heaven, who renders mercy back for mercy,
With openhanded bounty shall repay you. *Rouse.*

The French are always open, familiar, and talka-
tive; the Italians stiff, ceremonious, and reserved.
Addison.

The wall of the cathedral church was opened by an
earthquake, and shut again by a second. *Id.*

A friend who relates his success talks himself
into a new pleasure; and, by opening his misfortunes,
leaves part of them behind him. *Collier.*

The fire thus up, makes its way through the cracks
and openings of the earth. *Woodward.*

We express our thanks by openly owning our
parentage, and paying our common devotions to
God on this day's solemnity. *Atterbury.*

When the matter is made, the side must be opened
to let it out. *Arbuthnot on Aliments.*

Of an openhearted generous minister you are not to
say that he was in an intrigue to betray his country;
but in an intrigue with a lady. *Arbuthnot.*

Unnumbered treasures open at once,
From each she nicely culls with curious toil,
And decks the goddess.

Pope's Rape of the Lock.
These letters, all written in the openness of friend-
ship, will prove what were my real sentiments.
Id. Letters.

This reserved mysterious way of acting towards
persons, who in right of their posts expected a more
open treatment, was imputed to some hidden design.
Swift.

Hark! the dog opens, take thy certain aim;
The woodcock flutters. *Gay's Rural Sports.*
Give opening Hemus to my searching eye,
And high Olympus pouring many a stream.

Thomson.
This adroitness in breaking through fences was
termed 'getting her [the cow's] own living.' What
is scarcely credible, this character is openly given of
a cow, to enhance her value at a fair [in Ireland], by
one poor person to another. *Edgeworth.*

Look again at the same boy in the company of
those who inspire no terror: his countenance is open;
his altitude erect; his voice firm; his language free
and fluent; his thoughts are upon his lips; he speaks
truth without effort, without fear. *Id.*

Wise to promote whatever end he means,
God opens fruitful nature's various scenes:
Each climate needs what other climes produce,
And offers something to the general use;
No land but listens to the common call,
And in return receives supply from all. *Cooper.*
And thus ends the first part or beginning, which
is simple and unembellished, and opens the subject
in a natural and easy manner. *Canning.*

Though, by the respect of those at whose expense
it pleases them to be merry, they may be secured

from being rendered *openly* ridiculous; yet they may still be liable, and likely, to become secretly contemptible. *Id.*

If the ministers I have mentioned had pledged themselves—that the character of the Directory had something in it of peculiar candour, integrity, ingenuity, and *openness*, I should yet be willing to give credit to [this] retraction [of this opinion]. *Id.*

OPELEUSAS, a county and town in the south-west part of Louisiana, North America. Population 5048. The town is sixty miles west of Baton Rouge.

OPERA, *n. s.* Ital. *opera*, from the Lat. *opera*. A species of dramatic representation, defined in the extract from Dryden.

An *opera* is a poetical tale or fiction, represented by vocal and instrumental music, adorned with scenes, machines, and dancing. *Dryden.*

You will hear what plays were acted that week, which is the finest song in the *opera*. *Law.*

He was a critic upon *operas* too,
And knew all nations in the sock and buskin;
And no Venetian audience could endure a
Song scene, or air, when he cried seccatura.

Byron.

—I found by the discourse of the actors that there were great designs on foot for the improvement of the *opera*: that it had been proposed to break down a part of the wall, and to surprise the audience with a party of a hundred horse; and that there was actually a project of bringing the New River into the house, to be employed in jetties and water works.

Spectator.

An **OPERA** is a dramatic composition, set to music, and sung on the stage, accompanied with musical instruments, and enriched with magnificent dresses, machinery, and other decorations. See **MUSIC** and **POETRY**.

OPERA, ITALIAN. Italy, where music has always been cultivated with most success, was the birth-place of the opera, and thence it has been imported into every country where theatrical amusements are held in esteem. It was not attempted in England until the end of the seventeenth century; and its introduction experienced the opposition of those who then dictated on all subjects connected with literature. They justly ridiculed the monstrous absurdity of regulating the most serious events of tragedy by an orchestra; and even to the comic exhibitions they objected, on account of their being performed in a language not generally understood. They remonstrated on the impropriety of squandering away large sums of money on foreigners, and neglecting the merit of eminent British performers. The music, however, at the Italian opera, was so exquisite, that crowded audiences were never wanting. Fashion patronised it, and a succession of new performers gave it constantly increasing eclat. The establishment of this theatre is now extensive, and more brilliant than any in London. The scenery is most splendid, and the salaries of the performers are enormous. Not Rowe, not Sheridan, not Shakespeare, can prevent the English theatre from being considered a bore, which is only occasionally to be endured, while the dear delightful opera continues the nightly resort of rank and beauty. It is proper, however, to add, that at the King's Theatre a gratification is

afforded, in the ballet, to the eye as well as the ear; and more of the loungers who frequent the opera-houses are attracted by the luxurious display of female elegance, than by the magic of sweet sounds.

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| OPERATE , <i>v. n.</i> | } Lat. <i>operor</i> . To act; perform; have agency; taking on before the object: operable is practicable: operant and operative mean active; having causative power; vigorous: operation is action; efficacy or effect; agency: operator, he who performs or effects any thing: operose, laborious; tedious. |
| OP'ERABLE , <i>adj.</i> | |
| OP'ERANT , | |
| OPERATION , <i>n. s.</i> | |
| OP'ERATIVE , <i>adj.</i> | |
| OP'ERATOR , <i>n. s.</i> | |
| OP'EROSE , <i>adj.</i> | |

There are in men *operations* natural, rational, supernatural, some politick, some finally ecclesiastical. *Hooker.*

By all the *operations* of the orbs,
From whom we do exist and cease to be,
Here I disclaim all my paternal care. *Shakespeare.*

Earth, yield me roots!

Who seeks for better of thee, sauce his palate
With thy most *operant* poison. *Id. Timon.*

I must leave thee, love, and shortly too;
My *operant* powers their functions leave to do.

Shakespeare.

To be over curious in searching how God's all-piercing and *operative* spirit distinguishing gave form to the matter of the universal, is a search like unto his, who, not contented with a known ford, will presume to pass over the greatest rivers in all parts where he is ignorant of their depths. *Raleigh.*

All *operations* by transmission of spirits, and imagination, work at distance, and not at touch.

Bacon's Natural History.

Repentance and renovation consist not in the strife, wish, or purpose, but in the actual *operations* of good life. *Hammond.*

Waller's presence had an extraordinary *operation* to procure any thing desired. *Clarendon.*

Many of the nobility endeavoured to make themselves popular, by speaking in parliament against those things which were most grateful to his majesty; and he thought a little discountenance upon those persons would suppress that spirit within themselves, or make the poison less *operative* upon others. *Id.*

In actions of religion we should be zealous, active, and *operative*, so far as prudence will permit.

Taylor.

The tree whose *operation* brings
Knowledge of good and ill, shun to taste.

Milton.

Being incapable of *operable* circumstances, or rightly to judge the prudentiality of affairs, they only gaze upon the visible success, and thereafter condemn or cry up the whole progression. *Brown.*

The offices appointed, and the powers exercised in the church, by their institution and *operation* are holy. *Pearson.*

If the *operation* of these salts be in convenient glasses promoted by warmth, the ascending steams may easily be caught and reduced into a penetrant spirit. *Boyle.*

Written language, as it is more *operous*, so it is more digested, and is permanent. *Holder.*

Speculative painting, without the assistance of manual *operation*, can never attain to perfection, but slothfully languishes; for it was not with his tongue that Apelles performed his noble works. *Dryden.*

The pain and sickness caused by manna are the effects of its *operation* on the stomach and guts, by the size, motion, and figure of its insensible parts.

Locke.

Bodies produce ideas in us, manifestly by impulse, the only way which we can conceive bodies *operate* in.

Id.
The will is the conclusion of an *operative* syllogism.

Norris.

Such an explication is purely imaginary, and also very *operose*; they would be as hard put to it to get rid of this water, when the deluge was to cease, as they were at first to procure it.

Burnet.

It holds in all *operative* principles, especially in morality; in which, not to proceed is certainly to go backward.

South.

An imaginary *operator* opening the first with a great deal of nicety, upon a cursory view it appeared like the head of another.

Addison's Spectator.

The virtues of private persons *operate* but on a few; their sphere of action is narrow, and their influence is confined to it.

Atterbury.

In this understanding piece of clock-work, his body, as well as other senseless matter, has colour, warmth, and softness. But these qualities are not subsistent in those bodies, but are *operations* of fancy begotten in something else.

Bentley.

To administer this dose, there cannot be fewer than fifty thousand *operators*, allowing one *operator* to every thirty.

Swift.

A plain convincing reason *operates* on the mind both of a learned and ignorant hearer as long as they live.

Id.

This circumstance of the promise must give life to all the rest, and make them *operative* toward the producing of good life.

Decay of Piety.

Where causes *operate* freely, with a liberty of difference to this or the contrary, the effect will be contingent, and the certain knowledge of it belongs only to God.

Watts.

Although I have taught surgery seventeen years, and exhibited the most difficult *operations* upon the dead body, I have never ventured to apply a cutting instrument to a living subject, through a fear of giving too much pain.

Haller. Bibl. Chir. 1775.

No prudent mother will permit this eloquent village matron to quell the hearts of her children with terrors. We were once present when a group of speechless children sat listening to 'Blue-beard,' breathing astonishment. A gentleman, who saw the charm beginning to *operate*, resolved to counteract its dangerous influence.

Edgeworth.

These are all the essential circumstances which need here be mentioned, in regard to the mode of *operating*. The first day after the operation afforded hopes of a cure; and the circulation in the fore-arm was returning; but a difficulty of breathing afterwards came on, the limb mortified, and the patient died on the sixth day.

Dr. A. Rees.

OPHIDIUM, a genus of fishes belonging to the order of apodes. The principal characters are these:—The head is somewhat naked; the teeth are in the jaws, palate, and fauces; the body long; the fins of the back, tail, and anus, confounded in one; no fin on the under part of the body; and the eyes covered by the common skin. Of this genus there are several species, of which the most curious is the

O. barbatum of Linnæus, thus described by Dr. Broussonet in the seventy-first volume of the Philosophical Transactions:—'The scales of the ophidium,' says he, 'are irregularly placed and dispersed over the whole body. Their form is sometimes round, sometimes nearly oval. They are larger near the head, and in the lower part of the body; but are hardly to be distinguished near the tail. They adhere to the body

by means of a particular transparent skin, which is in general very thin, but somewhat thicker near the neck, and extended loosely over the whole head: this skin is very easily destroyed, after which, the scales falling, the body appears spotted. When you look at them with the naked eye, they appear as covered with very small grains; but, viewed through a microscope, the middle of them appears more elevated than the margin; and from the centre to the margin, close by each other, there are many lines or rays formed by small scales placed one upon another, like tiles upon a roof, the superior being always the nearer to the centre. This sort of scales, which may be called umbonate, are fastened to the body by very small vessels, which are inserted in their middle; they are to be seen on the body only, not on the head nor the fins.' The anatomy of this fish comprehends some very remarkable circumstances, which, our author thinks, were never observed in any other species. When the skin is drawn off there appears a thin membrane of a silver color, which covers the muscles. The muscles being removed, we find the peritonæum, which lines the abdominal cavity, and is adherent to the swimming bladder by some elongations. It is of a silver hue, with some very small black points. The ventricle is not to be distinguished from the intestines by any other mark but by its size; its form is oblong; it is extended almost to the anus, whence the intestinal duct has a retrograde course, and then descends again, having a little dilatation near the anus. On the vertebræ next the anus, on the outside of the peritonæum, is a kind of cavity of an oblong form, containing a reddish viscus, which he takes to be the kidney. The first vertebra from the head has nothing very remarkable in its structure. The second has on each side an elongated and sharp apophysis, to the apex of which is annexed a small ligament. The third is very flat, and has on each side a kind of triangular and sharp apophysis, to which adheres a ligament, as to the second. The fourth is remarkable in having a sharp apophysis on each side, articulated with the body of the vertebra; and under each of them is another articulated apophysis, flattish, thick, roundish at its extremities, and forked at its basis. The fifth, which is strongly adherent to the former, has in its middle a bifid process. The sixth has in its middle a flattish elevation, sharp on each side. Between the extremity of the larger apophysis of the fourth vertebra is a bone, or rather a hard cartilage, which bears the figure of a kidney, its convexity being turned towards the body of the vertebra: its position is parallel to the bodies of the vertebræ; its motion is half circular, one of its parts, viz. the lowest, being in the cavity of the swimming bladder, to which it adheres by a thin membrane, so that no air can escape at that part. It is covered by membranes, which adhere strongly to its middle; in this part are fastened the two ligaments of the apophysis of the second and third vertebræ, which are of a great tenuity. In the same point are fastened also two ligaments, each of which belongs to an oblong muscle parallel to each other, and fixed to the bones of the lowest and

posterior part of the head. All this apparatus is certainly subservient to the purpose of swimming; but it is very remarkable that, if these parts are necessary to some animal function, they should not be found in all the individuals; 'for I have seen,' says our author, 'two, of which the vertebræ were not different from the vertebræ of the other species; which difference depends, perhaps, on the difference of sex. I am inclined to believe so; but the generation in this fish seems to be no less mysterious than that of the eel: I could never distinguish a male from a female in this species.' This fish commonly grows to the size of eight or nine inches. It is found in all the Mediterranean Sea, and in great plenty in the Adriatic: its flesh is not of a good taste, rather coarse, as is that of all the species of fishes which, having no ventral fins, are obliged to make great efforts in swimming, and have consequently the muscles harder.

OPHIOLINGUA, adder's tongue, a genus of the natural order of filices, and the cryptogamia class of plants. The spike is articulated, flat, and turned to the two sides; with the articuli or joints opening across. There are seven species, of which the only remarkable one is the

O. vulgatum, the common adder's tongue, which is a native of several places of Britain, growing in meadows and moist pastures. The country people make an ointment of the fresh leaves, and use it as a vulnerary to green wounds; which is a very ancient application, recommended by Matthioli, Tragus, and others.

OPHIOMANCY, in antiquity, the art of making predictions from serpents. Thus Calchas, on seeing a serpent devour eight sparrows with their dam, foretold the duration of the siege of Troy: and the seven coils of a serpent that was seen on Anchises's tomb were interpreted to mean the seven years that Æneas wandered from place to place before he arrived at Latium.

OPHIOPHAGOUS, *adj.* Gr. *ὄφις* and *φάγω*. Serpent eating. Not used.

All snakes are not of such poisonous qualities as common opinion presumeth; as is confirmable from *ophiophagus* nations, and such as feed upon serpents. *Broun.*

OPHIORRHIZA, in botany, a genus of the monogynia order, and pentandria class of plants: natural order forty-seventh, stellatæ: cor. funnel-shaped: caps. twin, bilocular, and polyspermous. There are two species; the most remarkable is the

O. Asiaticum, or true *lignum colubrinum*. The root of this is known in the East Indies to be a specific against the poison of that most dreadful animal called the hooded serpent. There is a treatise in *Amœn. Acad. tom. iv.* upon this subject, wherein the author, John And. Darelius, undertakes, from the description of such authors as had seen it upon the spot, to ascertain the plant from which the genuine root is taken. It appears in this account that it had puzzled the European physicians; and what had been sold in the shops for it is the root of a very different plant, and of a poisonous nature. The true root is called *mungus*, for the following reason:—There is a kind of weasel in the East

Indies, called *mungutia* by the natives, *mungo* by the Portuguese, and *muncas* by the Dutch. This animal pursues the hooded serpent, as the cat does the mouse. As soon as the serpent appears, the weasel attacks him; and, if she chances to be bit by him, she immediately runs to find a certain vegetable, upon eating which she returns and renews the fight.—The Indians are of opinion that this plant is the *mungus*. That celebrated traveller Kämpfer, who kept one of these weasels tame, that eat with him, lived with him, and was his companion wherever he went, says he saw one of these battles between her and the serpent, but could not certainly find out what root the weasel looked for. But, whether the weasel first discovered this antidote or not, it is an infallible remedy against the bite of the hooded serpent.

OPHIOXYLON, in botany, a genus of the monœcia order, and polygamia class of plants: *HERMAPHRODITE* CAL. quinquefid: cor. quinquefid and funnel-shaped; with a cylindrical nectarium within its mouth.

OPHIR, a country mentioned in Scripture, from which Solomon had great quantities of gold brought home in ships, which he sent for that purpose; but respecting the situation of which authors are much divided in opinion. Some have gone to the West, others to the East Indies, and the eastern coasts of Africa, in search of it. But the two opinions which have been most plausibly supported are those of Mr. Bruce, the Abyssinian traveller, and Dr. Doig, author of *Letters on the Savage State*. The latter holds that Ophir was somewhere on the west coast of Africa; the former is satisfied that it was the country which is now called Sofala, a kingdom of Africa, on the coast of Mosambique, near Zanguebar.

OPHITES, *n. s.* A stone resembling a serpent.

Ophites has a dusky greenish ground, with spots of a lighter green, oblong, and usually near square. *Woodward.*

OPHITES, in church history, Christian heretics, so called both from the veneration they had for the serpent that tempted Eve, and the worship they paid to a real serpent: they pretended that the serpent was Jesus Christ, and that he taught men the knowledge of good and evil. They distinguished between Jesus and Christ: Jesus, they said, was born of the Virgin, but Christ came down from heaven to be united with him; Jesus was crucified, but Christ had left him to return to heaven. They distinguished the God of the Jews, whom they termed *Jaldabaoth*, from the supreme God: to the former they ascribed the body, to the latter the soul of men. They had a live serpent, which they kept in a kind of cage; at certain times they opened the cage-door, and called the serpent: the animal came out, and, mounting upon the table, twined itself about some loaves of bread; this bread they broke, and distributed it to the company, who all kissed the serpent: this they called their eucharist.

OPHIRYS, *twyblade*, a genus of the diandria order, and gynandria class of plants: natural order seventh, orchidæ. The nectarium is a

little carinated below. The species are numerous; but the most remarkable are the following:

1. *O. anthropophora*, man-shaped ophrys, or man-orchis, has a roundish bulbous root, crowned with three or four oblong leaves; upright thick stalks, rising a foot and a half high, adorned with narrow leaves, and terminated with loose spikes of greenish flowers, representing the figure of a naked man; the lip of the nectarium linear tripartite, with the middle segment longest and bifid. There is a variety with brownish flowers tinged with green.

2. *O. insectifera*, the insect orchis, bee-flower, or gnat-flower, has two roundish bulbous roots, crowned with oblong leaves; erect leafy stalks, from six to ten or twelve inches high, terminated by spikes of insect-shaped greenish flowers, having the lip of the nectarium almost five-lobed. This wonderful species exhibits flowers in different varieties, that represent singular figures of flies, bees, and other insects; and are of different colors in the varieties.

O. monorchis, or musky ophrys, has a roundish bulbous root: crowned with three or four oblong leaves; an erect naked stalk, six inches high; terminated by a loose spike of yellowish, musky scented flowers.

4. *O. nidus avis*, or bird's nest, with a bulbous, fibrated, clustered root; upright, thick, succulent stalks, a foot high, sheathed by the leaves, and terminated by loose spikes of pale-brown flowers; having the lip of the nectarium bifid.

5. *O. ovata*, oval-leaved ophrys, or common twy-blade, has a bulbous, fibrated root; crowned by two oval, broad, obtuse, veined, opposite leaves; an erect, succulent green stalk, six or eight inches high, naked above, and terminated by a loose spike of greenish flowers, having the lip of the nectarium bifid. The flowers of this species resemble the figure of a gnat.

6. *O. spiralis*, spiral orchis or triple ladies tresses, has bulbous, oblong, aggregated roots; crowned by a cluster of oval, pointed, ribbed leaves; erect simple stalks, half a foot high; terminated by long spikes of white odoriferous flowers hanging to one side, having the lip of the nectarium entire, and crenated. All these species of ophrys flower in summer, at different times, in different sorts, from May until July; and in most of the sorts exhibit a singularly curious appearance. The plants are perennial in their roots, which are of the bulbous fleshy kind, from which the flower stalks rise annually in spring, and decay in autumn; at which period is the proper time for removing the roots from one place to another. They all grow wild in Britain, &c.; are residents of woods, bogs, marshy grounds, sterile pastures, chalky soils, and the like places, where they flourish and display their singular flowers in great abundance, from which places they are introduced into gardens for variety; and having procured some plants at the proper season, and planted them in soils and situations somewhat similar to that in which they naturally grow, the roots will abide for several years, and flower annually. As to their propagation, it may be tried by seed in a shady border, as soon as it is ripe; likewise by

offsets from the root, though they multiply sparingly in gardens: however, roots of some standing may be examined at the proper season, and any offsets separated and planted in their proper places.

OPHTHALMIC, *adj.* } *Fr. ophthalmic; Gr. Op'HTHALMY, n. s.* } *οφθαλμος*. Relating to the eye: a disease of the eyes.

The use of cool applications externally is most easy to the eye; but, after all, there will sometimes ensue a troublesome *ophthalmia*. *Sharp's Surgery.*

The *ophthalmia*, I hope, has left you. Without doubt this complaint has been occasioned in yourself, from the too great use you have made of your eyes; but a similar one, which afflicted our troops in Egypt, proceeded, I think, from a too great glare of light. *Bp. Watson.*

OPIATE, *n. s. & adj.* From **OPIUM**, which see. A soporific; a medicine causing sleep: somniferous.

The particular ingredients of those magical ointments, are *opiate* and *soporiferous*. For anointing of the forehead and backbone is used for procuring dead sleeps. *Bacon.*

All their shape
Spangled with eyes, more numerous than those
Of Argus, and more wakeful than to drowse,
Charmed with Arcadian pipe, the pastoral reed
Of Hermes, or his *opiate* rod. *Milton.*

Lettuce, which has a milky juice with an anodyne or *opiate* quality resolvent of the bile, is proper for melancholy. *Arbutnot.*

They chose atheism as an *opiate*, to still those frightening apprehensions of hell, by inducing a dullness and lethargy of mind, rather than to make use of that native and salutary medicine, a hearty repentance. *Bentley.*

Thy thoughts and music change with every line;
No sameness of a prattling stream is thine,
Which with one unison of murmur flows,
Opiate of inattention and repose. *Harte.*

Should tempting novelty thy call refrain,
And Sloth effuse her *opiate* fumes in vain;
Should Beauty blush or fix her fatal dart,
Nor claim the triumph of a labored heart. *Johnson.*

OPIE (John), R. A., and professor of painting at the academy, was born in 1761 in the parish of St. Agnes, Cornwall. His father was a carpenter, and intended him for the same occupation, but his talents when he was very young attracted the notice of Dr. Walcot (the Peter Pindar of the last reign), a physician at Truro, who gave him some instructions, and enabled him to travel in the neighbourhood as a portrait painter. He returned from his first expedition with twenty guineas, earned by his pencil, and thenceforward resolved to devote himself to painting. At about nineteen years of age he removed to London, but it was not till 1786 that any of his pictures were admitted into Somerset House. He was shortly after nominated an associate of the academy, and an academician. He first exercised his literary ability in a life of Sir Joshua Reynolds, in Dr. Walcot's edition of Pilkington's painters. He then published *An Enquiry into the requisite Cultivation of the Arts of Design in England*; and delivered lectures at the Royal Institution. In 1804 he succeeded Mr. Fuseli as professor of painting. He died April 9th, 1807, and was interred in St. Paul's. His pencil

was employed on the pictures exhibited in the Boydell and Macklin galleries, and some of his lectures as professor of painting have been published.

OPIFICE, *n. s.* } Latin *opificium*, *opifer*.
OP'IFICER. } Workmanship: opificer, the workman or artificer.

There is an infinite distance betwixt the poor mortal artist and the almighty opificer. *Bentley.*

OPINE', *v. n.* } Latin *opinor*.
OPIN'ABLE, *adj.* } To think; judge;
OPIN'ATION, *n. s.* } suppose: opinable
OPINATOR, *n. s.* } means which may
OPIN'ATIVE, *adj.* } be thought: opina-
OPINIA'TOR, *n. s.* } tion, opinion; no-
OPINIA'TRE, *adj.* } tion; opinator, he
OPINIA'TRETT, or } who holds or con-
OPINIA'TRY, *n. s.* } ceives a notion: o-
OPIN'ION, *n. s. & v. a.* } pinative, imagined;
OPIN'IONATIVE, *adj.* } stiff in opinion: o-
OPINIONATE, *n. s.* } pinator, one who holds
OPIN'IONATELY, *adv.* } or is fond of par-
OPIN'IONATENESS, *n. s.* } ticular notions: o-
OPINIONIST. } piniate (Fr. *opini-*

tre), a needless Gallicism, for obstinate, stubborn in opinion: opiniatry or opiniatry (a word of the same character as the last), obstinacy; pertinacity of opinion: all the above words are of unusual occurrence, of little use, and less elegance. Opinion is, notion; persuasion of mind; sentiment; judgment: to opinion (an obsolete verb), means to opine; think; deem: opinionative, tenacious or stubborn in opinion; which sense the adverb and noun-substantive following take: opinionist, one who is opinionative; one stubborn or inflexible in his notions.

What will not *opiniators* and self-believing men dispute of and make doubt of? *Raleigh.*

Opinion is a light, vain, crude, and imperfect thing, settled in the imagination, but never arriving at the understanding, there to obtain the tincture of reason. *Ben Jonson.*

Howsoever I have no *opinion* of those things; yet so much I conceive to be true, that strong imagination hath more force upon things living, than things merely inanimate. *Bacon.*

In actions of arms small matters are of great moment, especially when they serve to raise an *opinion* of commanders. *Hayward.*

He is a rare man that is not wise in his own conceit; and that says not within himself, 'I see more than my neighbour;' for we all are born proud and self-opinionate. *Bp. Hall.*

Where no such settled custom hath made it law, there it hath force only according to the strength of reason and circumstances joined with it, or as it shews the *opinion* and judgment of them that made it; but not at all as if it had any commanding power of obedience. *Selden.*

Time wears out the fictions of *opinion*, and doth by degrees discover and unmask that fallacy of ungrounded persuasions; but confirms the dictates and sentiments of nature. *Wilkins.*

Essex left lord Roberts governor; a man of a sour and surly nature, a great *opiniator*, and one who must be overcome, before he would believe that he could be so. *Clarendon.*

Opinion is, when the assent of the understanding is so far gained by evidence of probability that it rather inclines to one persuasion than to another, yet not altogether without a mixture of uncertainty or doubting. *Hale.*

Consider against what kind of *opiniators* the reason above given is levelled. *Id.*

Fear is an ague, that forsakes
 And haunts by fits those whom it takes;
 And they'll *opine* they feel the pain
 And blows they felt to-day, again. *Hudibras.*

The Stoicks *opinioned* the souls of wise men dwell about the moon, and those of fools wandered about the earth; whereas the Epicureans held nothing after death. *Broune.*

Least popular *opiniatry* should arise, we will deliver the chief *opinions*. *Id. Vulgar Errors.*

It is difficult to find out truth, because it is in such inconsiderable proportions scattered in a mass of *opiniative* uncertainties; like the silver in Hiero's crown of gold. *Glanville.*

That the soul and angels are devoid of quantity and dimension, is generally *opinioned*. *Id.*

Every conceited *opinionist* sets up an infallible chair in his own brain. *Id. to Albius.*

We may allow this to be his *opinion* concerning heirs, that where there are divers children the eldest son has the right to be heir. *Locke.*

Instead of an able man you desire to have him an insignificant wrangler, *opiniatre* in discourse, and priding himself in contradicting others. *Id.*

The one sets the thoughts upon wit and false colours, and not upon truth; the other teaches fallacy, wrangling, and *opiniatry*. *Id. on Education.*

So much as we ourselves comprehend of truth and reason, so much we possess of real and true knowledge. The floating of other men's *opinions* in our brains, makes us not one jot the more knowing, though they happen to be true: what in them was science, is in us but *opiniatry*. *Locke.*

One would rather chuse a reader without art, than one ill instructed with learning, but *opinionative* and without judgment. *Burnet.*

In matters of mere speculation, it is not material to the welfare of government or themselves, whether they *opine* right or wrong, and whether they be philosophers or no. *South.*

Charity itself commands us, where we know no ill, to think well of all; but friendship, that always goes a pitch higher, gives a man a peculiar right and claim to the good *opinion* of his friend. *Id.*

A story out of Boccacini sufficiently shews us the *opinion* that judicious author entertained of the crickets. *Addison.*

Blest be the princes who have fought
 For pompous names, or wide dominion,
 Since by their error we are taught,
 That happiness is but *opinion*. *Prior.*

I can pass by *opiniatry*, and the busy meddling of those who thrust themselves into every thing. *Woodward's Letters.*

I was extremely concerned at this *opiniatry* in leaving me; but he shall not get rid so. *Pope.*

But I, who think more highly of our kind,
Opine, that nature, as in duty bound,
 Deep hid the shining mischief under ground. *Id.*

If a woman had no *opinion* of her own person and dress, she would never be angry at those who are of the *opinion* with herself. *Law.*

The only view in which the Scriptures ever regards belief of the truth is as the foundation of virtuous practice: without which effect, not right *opinions* only, but also all other qualifications whatsoever, are, in the religious estimation of things, reputed as nothing. *S. Clarke.*

Set your *opinion* at whatever pitch,
 Knots and impediments make something hitch;
 Adopt his own, 'tis equally in vain,
 Your thread of argument is snapped again;

The wrangler, rather than accord with you,
Will judge himself deceived and prove it too.

Cosper.

Here they are, the family of the Surfaces up to the Conquest.

SIR. O.—And in my *opinion* a goodly collection.

Sheridan.

We should never triumph over children for changing their *opinions*. You think it is a want of judgment that he changes his *opinion*. Do you think it a proof that your scales are bad, because they vibrate with every additional weight that is added to either side?

Edgeworth.

I protest that if the ministers whom I have mentioned, had pledged themselves yet deeper to a mistaken *opinion* of France, I should yet be willing to credit their asseveration, if they were now to come forward and tell us, that the declaration and confession of France herself had completely changed their *opinion*.

Canning.

OPINION is that judgment which the mind forms of any proposition for the truth or falsehood of which there is not sufficient evidence to produce science or absolute belief. That three angles of a plane triangle are equal to two right angles is not a matter of opinion, nor can it with propriety be called an object of the mathematician's belief: he does more than believe it; he knows it to be true. When two or three men, under no temptation to deceive, declare that they were witnesses of an uncommon though not preternatural event, their testimony is complete evidence, and produces absolute belief in the minds of those to whom it is given; but it does not produce science-like rigid demonstration. The fact is not doubted, but those who have it on report do not know it to be true, as they know the truth of propositions intuitively or demonstrably certain. When one or two men relate a story including many circumstances to a third person, and another comes who positively contradicts it, either in whole or in part, he, to whom those jarring testimonies are given, weighs all the circumstances in his own mind, balances the one against the other, and lends an assent, more or less wavering, to that side on which the evidence appears to preponderate. This assent is his opinion respecting the facts of which he has received such different accounts.

OPITIUS, or OPITS (Heury), a learned Lutheran divine, born at Altenburg in Misnia, in 1642. He was professor of theology and of the oriental languages at Kiel, where he acquired great reputation by a variety of excellent works concerning oriental literature and Hebrew antiquities. He died in 1712.

OPITS, or OPITIVS (Martin), a celebrated German poet, born at Breslaw in 1507. He acquired great fame by his Latin, and more by his German poems; and, retiring to Dantzic, wrote a history of the ancient Daci. He died of the plague in 1639.

OPIMUM, *n. s.* Arab. *ufyoon*; Gr. *οπιον*; Lat. *opium*, supposed from Gr. *οπος*, sap. The inspissated juice of the oriental poppy. See below.

Sleep hath forsook and given me o'er
To death's benumbing *opium* as my only cure.

Milton.

The color and taste of *opium* are, as well as its soporific or anodyne virtues, mere powers depending

on its primary qualities, whereby it is fitted to produce different operations on different parts of our bodies.

Loche.

OPIMUM, in the materia medica, is the inspissated juice of the papaver album brought to us in cakes from eight ounces to a pound weight. It easily receives an impression from the finger. It is to be chosen moderately firm, and not too soft; its smell and taste should be very strong, and care taken that there be no dirty or stony matter in it. In Asia, when the heads are near ripening, they wound them with an instrument that has five edges, which, on being stuck into the head, makes at once five long cuts in it; and from these wounds the opium flows, and is next day taken off by a person who goes round the field, and put up in a vessel which he carries fastened to his girdle; at the same time that his opium is collected the opposite side of the poppy-head is wounded, and the opium collected from it the next day. After they have collected the opium they moisten it with a small quantity of water or honey, and work it a long time upon a flat, hard, and smooth board, with a thick and strong instrument of the same wood, till it becomes of the consistence of pitch; and then work it up with their hands, and form it into cakes or rolls for sale. Opium, at present, is in great esteem, and is one of the most valuable of all the simple medicines. In its effects on the animal system it is the most extraordinary substance in nature. Its first effects are like those of a strong, stimulating cordial, but are soon succeeded by universal languor or irresistible propensity to sleep, attended with dreams of the most rapturous and enthusiastic kind. After these contrary effects are over, which are generally terminated by a profuse sweat, the body becomes cold and torpid; the mind pensive and desponding; the head is affected with stupor, and the stomach with sickness and nausea. Those who take opium to excess experience languor and dejection of spirits common to such as drink spirituous liquors in excess; to the bad effects of which it is similar, since, like those, they are not easily removed without a repetition of the dose. By the indiscriminate use of that preparation of opium called Godfrey's cordial, many children are yearly cut off; for it is frequently given dose after dose, without moderation, by ignorant women and mercenary nurses, to silence the cries of infants and lull them to sleep, by which they are at last rendered stupid, inactive, and rickety. Opium is used as a luxury in the east. Mr. Grose informs us, that most of the hard-laboring people at Surat, and especially the porters, take great quantities of this drug, which, they pretend, enables them to work, and carry heavier burdens than they otherwise could do. Some of these, our author assures us, will take more than an ounce at a time without detriment. Besides these effects of opium, it is said by the Indians to have a very singular one, in bringing on a seeming heaviness of the head and sleepiness of the eye, at the same time that it really produces great watchfulness. It is also considered as a great inspirer of courage, or rather insensibility to danger; so that the commanders make no

scruple of allowing large quantities of it to the soldiers, when they are going to battle or engaged in any hazardous enterprise. The best opium in the world is said to come from Patna on the Ganges, where, at least, the greatest traffic of it is made, and whence it is exported all over India; though in some parts, especially on the Malay coasts, it is prohibited under pain of death on account of the madness, and murders consequent upon that madness, which are occasioned by it; notwithstanding which severe prohibition, however, it is plentifully smuggled into all these countries. The soil about the Ganges is accounted best for producing the strongest kind of opium. Opium, if long kept upon the skin, takes off the hair, and always occasions an itching in it; sometimes it exulcerates it, and raises little blisters, if applied to a tender part. Sometimes, on external application, it allays pain, and even occasions sleep; but it must by no means be applied to the head, especially to the sutures of the skull; for it has been known to have the most terrible effects in this application, and even to bring on death itself. It appears, too, from some curious experiments made by Dr. Leith, to act as the most powerful of all styptics. Opium contains gum resin, essential oil, salt, and earthy matter; but its narcotic or somniferous power has been experimentally found to reside in its essential oil. Agreeably to the descriptions given of the powers of opium by most medical authors, we have used the term narcotic; but Dr. Beddoes objects to it in the following words:—'It is curious to see what pains medical writers have taken to imagine hypotheses, either out of mere complaisance to the term narcotic, or because opium is a drug in Christendom, and wine an article of diet, rather than suffer themselves to see that opium makes a man merry or drunk, then lays him asleep, then afterwards causes him to awake with a head-ache, in the same manner as wine.'

In 1799 the manufacture of opium in India was placed under the management of the government then under marquis Wellesley. All the abuses that had prevailed in the preparation of the drug, adulteration, fallacious envelopes of the cakes, short weight, &c., were at that period abolished, and, ever since, the utmost care has been taken, that the opium put up at the company's sales shall be in the utmost state of purity, that the envelopes shall be of the due degree of thickness, and the drug of the proper consistence. Dr. John Fleming, M.P., then president of the Medical Board at Calcutta, had the merit of having formed and recommended this plan of providing the opium, and, on his return to England in 1803, he received on this account a remuneration from the Honorable Court of Directors, of Sicca rupees 50,000, or £6250 sterling. According to Orfila, a dangerous dose of opium is rather aggravated than counteracted by vinegar. The proper remedy is a powerful emetic, such as sulphate of zinc, or sulphate of copper. See an interesting and well-treated case, in the first volume of the *Medico-Chirurgical Transactions*, by Dr. Marcet and Mr. Astley Cooper. The experiments of M. Magendie have shown that the salt extracted long ago from

opium by Derosnes, and which has been called narcotine, produces a stupor differing from real sleep and acts on dogs as a poison in small doses. This narcotine may be separated by sulphuric ether, from the strained watery extract of opium. The ether afterwards deposits the narcotine in crystals; while the residuary opium is supposed to be better fitted than before, for procuring tranquil sleep.

The monopoly of the opium, produced from the culture of the poppy, is the third principal branch of the East India Company's territorial revenue in India.

In 1773 the contract or extensive privilege for providing opium was granted to Meer Munkeer, in preference (as was stated by government) to any one else, because, being the person employed by the gentlemen of Patna in that business, he was the best acquainted with the proper mode of managing it, and would account for any outstanding balances. He was to deliver the Bahar opium at 320 rupees, and the Oude at 350 rupees per maund.

Since that time the East India Company's annual revenue upon that article alone, has risen from eight to upwards of eighty lacs of rupees, or more than £1,000,000 sterling. By a report, dated East India House, 29th February 1816, which was at that time laid before Parliament, the sale of opium in Bengal for the year 1813-14, amounted to ninety-six lacs, 40,729 current rupees, the advances and charges upon which, only amounted to ten lacs, 77,638 current rupees.

But the opium used in Britain is principally supplied from Turkey. The gross amount of duty upon opium, imported into Great Britain in the year 1816, was only £2,651 13s., while the average quantity consumed in Britain is 14,400 lbs., which is chargeable with a duty of 8s. 8d. per pound. There are besides from 250 to 300 chests of opium imported from Turkey, and lodged in bond warehouses for exportation, each chest containing from 150 lbs. to 200 lbs. of opium. This statement was made by a member of the Turkey Company in London.

The following account of the Indian method of cultivating opium, as practised in the province of Baha, is given by Mr. Kerr:—'The field,' he says, 'being well prepared by the plough and harrow, and reduced to an exact level superficies, it is then divided into quadrangular areas of seven feet long, and five feet in breadth, leaving two feet of interval, which is raised five or six inches, and excavated into an aqueduct for conveying water to every area, for which purpose they have a well in every cultivated field. The seeds are sown in October or November. The plants are allowed to grow six or eight inches distant from each other, and are plentifully supplied with water. When the young plants are six or eight inches high, they are watered more sparingly. But the cultivator strews all over the areas a nutrient compost of ashes, human excrements, cow-dung, and a large portion of nitrous earth, scraped from the highways and old mud walls. When the plants are nigh flowering, they are watered profusely, to increase the juice. When the capsules are half grown, no more wa-

ter is given, and they begin to collect the opium. At sun-set they make two longitudinal double incisions upon each half-ripe capsule, passing from below upwards, and taking care not to penetrate the internal cavity of the capsule. The incisions are repeated every evening until each capsule has received six or eight wounds; they are then allowed to ripen their seeds. The ripe capsules afford little or no juice. If the wound was made in the heat of the day, a cicatrix would be too soon formed. The night dews, by their moisture, favor the extillation of the juice. Early in the morning, old women, boys, and girls, collect the juice by scraping it off the wounds with a small iron scoop, and deposit the whole in an earthen pot, where it is worked by the hand in the open sunshine, until it becomes of a considerable spissitude. It is then formed into cakes of a globular shape, and about four pounds in weight, and laid into little earthen basins, to be further exsiccated. These cakes are covered over with the poppy or tobacco leaves, and dried until they are fit for sale. There are about 600,000 lbs. of it annually exported from the Ganges.

It appears highly probable that the white poppy might be cultivated for the purpose of obtaining opium to great advantage in Britain. 'The milky juice, drawn by incision from poppy-heads, and thickened either in the sun or shade, even in this country, has all the characters of good opium; its color, consistence, taste, smell, faculties, phenomena, are all the same; only, if carefully collected, it is more pure and more free of feculencies.' Indeed the cultivation of it has been in several instances attempted with success.

Opium, called also Opium Thebaicum, from being anciently prepared chiefly at Thebes, has been a celebrated medicine from the remotest times. It differs from the meconium, which by the ancients was made of the expressed juice or decoction of the poppies. It has a reddish brown color, and a strong peculiar smell; its taste at first is nauseous and bitter, but soon becomes acrid, and produces a slight warmth in the mouth; a watery tincture of it forms an ink, with a chalybeate solution. The use of this celebrated medicine, though not known to Hippocrates, can be clearly traced back to Diagoras, who was nearly his contemporary, and its importance has ever since been gradually advanced by succeeding physicians of different nations. Its extensive practical utility, however, has not been long well understood; and in this country, perhaps, may be dated from the time of Sydenham. Opium is the chief narcotic now employed; it acts directly upon the nervous power, diminishing the sensibility, irritability, and mobility of the system. From this sedative power of opium, by which it allays pain, inordinate action, and restlessness, it naturally follows, that it may be employed with advantage in a great variety of diseases. Indeed, there is scarcely any disorder in which, under some circumstances, its use is not found proper; and, though in many cases it fails of producing sleep, yet if taken in a full dose, it occasions a pleasant tranquillity of mind, and a drowsiness which approaches to

sleep, and refreshes the patient. The requisite dose of opium varies in different persons, and in different states of the same person. A quarter of a grain will in one adult produce effects which ten times the quantity will not do in another; and a dose that might prove fatal in cholera or cholic, would not be perceptible in many cases of tetanus or mania. The lowest fatal dose, to those unaccustomed to take it, seems to be about four grains; but a dangerous dose is so apt to produce vomiting, that it has seldom time to occasion death. When given in too small a dose, it often produces disturbed sleep, and other disagreeable consequences; and in some cases it seems impossible to be made to agree in any dose or form. Often, on the other hand, from a small dose, sound sleep and alleviation of pain will be produced, while a larger one occasions vertigo and delirium. Some prefer the repetition of small doses; others the giving a full dose at once; its operation is supposed to last about eight hours.

OPOBALSAM. The most precious of the balsams is that commonly called balm of Gilead, opobalsamum, balsamæleon, balsamum verum album, Ægyptiacum, Judaicum, Syriacum, & Mecca, &c. This is the produce of the amyris opobalsamum.

The true balsam is of a pale yellowish color, clear and transparent, about the consistence of Venice turpentine, of a strong, penetrating, agreeable, aromatic smell, and a slightly bitterish pungent taste. By age it becomes yellower, browner, and thicker, losing by degrees, like volatile oils, some of its finer and more subtle parts. To spread, when dropped into water, all over the surface, and to form a fine thin rainbow-colored cuticle, so tenacious that it may be taken up entire by the point of a needle, were formerly infallible criteria of the genuine opobalsam. Neumann, however, had observed that other balsams, when of a certain degree of consistence, exhibit these phenomena equally with the Egyptian. According to Bruce, if dropped on a woollen cloth, in its pure and fresh state, it may be washed out completely and readily with simple water.

OPOCALPASUM, OPOCARBASUM, or APOCALPASUM, a gummy resinous substance, which has a strong resemblance to the best liquid myrrh, and which in the time of Galen they mixed with myrrh. It was difficult, according to this writer, to distinguish the one from the other unless by their effects. It was a poisonous juice, which frequently produced lethargy and sudden strangling. He has known several persons who died in consequence of inadvertently taking myrrh in which there was a mixture of opocarbassum. Perhaps it was only a juice composed of a solution of euphorbia, in which drops of opium were macerated. Poisons of this kind have from time immemorial been as common in Africa as that of arrows poisoned with the juice of the mancanilla is in America.

OPODELDOC, a quack medicine, compounded of camphor, soap and spirits, similar to the medical prescription called by regular practitioners the saponaceous balsam; only the opodeldoc has a larger proportion of soap. It is

prescribed for rheumatisms, chilblains, and all kinds of sprains.

OPOPONAX is the name of a medicinal gum of a tolerably firm texture, sometimes in masses formed of a number of small granules connected by a quantity of matter of the same kind; but these are usually loaded with extraneous matter, and are greatly inferior to the pure loose kind. The drops or granules of the fine opoponax are on the outside of a brownish-red color, and of a dusky yellowish or whitish color within: they are of a somewhat unctuous appearance, smooth on the surface: and are to be chosen in clear pieces, of a strong smell and acid taste. This gummy substance is obtained from the roots of an umbelliferous plant, which grows spontaneously in warm countries, and bears the cold of this. The juice is brought from Turkey and the East Indies; and it is an attenuating and aperient medicine. Boerhaave frequently employed it, along with ammoniacum and galbanum, in hypochondriacal disorders, obstructions of the abdominal viscera, and suppressions of the menstrual evacuations, from a sluggishness of mucous humors; with these intentions it is a useful ingredient in the pilulæ gummosæ and compound powder of myrrh of the London Pharmacopœia, but it is not employed in any composition of the Edinburgh. It may be given by itself in the dose of a scruple, or half a drachm: a whole drachm proves in many constitutions gently purgative: also dispels flatulencies, is good in asthmas, in inveterate coughs, and in disorders of the head and nerves.

OPORINUS (John), a celebrated German printer born at Basil, in 1507. His father was a painter, and being a man of education taught him Latin himself, in which he improved himself further when he studied Greek at Strasburg. He afterwards kept a school, transcribed MSS., and became a corrector of the press. He married an old woman, the widow of one Xelotect, a canon of Lucerne, who, though rich, was a perfect Xantippe, and, when relieved by her death, he was as poor as ever. He married, however, three times afterwards. He studied physic, and was for two years secretary to the famous Paracelsus. He at last commenced printer; and published many valuable works, from old MSS., with notes; as well as some original pieces of his own. He died in 1568, aged sixty-one.

OPORTO, or the Port, a large city, the second place of commercial consequence in Portugal, stands near the mouth of the Douro on its north bank, and covers an acclivity rising from the brink of the river. It is the grand outlet for all the products of the northern part of the kingdom, and particularly of the wine so well known by its name, and of which from 50,000 to 70,000 pipes are annually shipped. It has an old wall, five or six feet thick, flanked at intervals with towers, and is further protected by a small fort: but, as the harbour is extremely difficult of entrance, the Portuguese government have given little attention of late to the fortifications. The quay extends the whole length of the town; on one side

is a street, the other side is walled and raised for the purpose of fastening ships' cables. At certain seasons, in consequence of the rains, or of the melting of the snow on the mountains, the Douro is swelled here to a great size, and becomes a mighty torrent, when a number of booms are placed on the quay to secure the vessels. The roadstead of Oporto is very spacious.

The streets on the declivity of the hill are narrow, crooked, and dirty, but several of those on the top are fine and broad. Indeed Oporto is allowed on the whole to be the cleanest and most agreeable town in Portugal. The steepness of the hill, however, renders walking or riding difficult: on the east of the town the houses overhanging the side of the river are built on so steep a declivity, as to be accessible only by steps cut out of the rock.

The climate here is moist in winter, both from the vicinity of the Atlantic, and the mountains and woods of the neighbourhood. The cold is therefore keen for the latitude, but seldom reaches to frost: in summer, on the other hand, the heat would be intense, were it not moderated by the winds which blow regularly from the east in the morning, from the south in the middle of the day, and at night from the west. The gardens in the environs of the town are beautiful and pleasant, producing, according to their respective degrees of elevation, the fruits of the northern or southern latitudes: and the whole appearance of the place to a stranger is very imposing.

On the opposite bank of the Douro westward is Gaya, reputed to occupy the site of the ancient town of Cale, and considered now as a suburb of Oporto, which was once called Portus Cale. In process of time it became the more considerable town of the two, and took the title of O Porto (the Port), and the kingdom took that of Portus Cale (Portugal). To the east of Gaya is another small but populous town, called Villa Nova do Porto, inhabited by mechanics and the lower orders. Altogether the population of the two towns on the south bank is not short of 20,000. Between Gaya and Villa Nova are immense warehouses for storing the wine from the interior. The vicinity exhibits many traces of metallic ores, and particularly veins of copper.

The wine exported is produced, not strictly in the adjacent country, so much as in the extensive province of Tras los Montes, to the north-west, and in some districts of Entre Douro e Minho. The amount exported differs in different years. A chartered company for the regulation of this trade was established by the government in 1756. The lesser exports are linen, oil, sumach, and oranges. The imports are woollen, cotton, and hardware manufactures, all chiefly from England; fish from the west of England and Newfoundland; hemp and flax from the Baltic; and rice from the United States. Oporto has long been the seat of a British factory. The established commercial houses of the British are in number about thirty; but in addition there is always a number of English in Oporto as temporary visitors. They have an exchange or place of daily meeting in a part of the High Street covered with canvas. They have also a casino, or house fitted up with reading rooms. The ex-

change with this country is computed as at Lisbon, in milrees, of which about sixty-five (more or less according to circumstances) are reckoned to £1 sterling.

Opporto, in addition to its commercial establishments, contains a naval arsenal and dock yard, but the harbour, partly from rocks at the mouth of the Douro, and partly from the accumulation of sand, is seldom entered by ships of war. It is a bishop's see, the seat of a corregidor, a provedor, a military commander, and a theatre. The population of the whole, including the suburbs to the south, is about 70,000.

This city was in the possession of the French in 1808, and the spring of 1809, when marshal Soult was surprised here by lord Wellington. It remained ever after undisturbed by the French. It is 172 miles north by east of Lisbon, and forty-nine north of Coimbra.

OPOSSUM, in zoology. See DIDELPHIS.

OPPIA LEX, the Oppian law, in Roman antiquity, a law introduced by C. Oppius, the tribune, A. U. C. 540. It enacted, that no woman should wear above half an ounce of gold, have partly colored garments, or be carried in any city or town, or to any place within a mile, unless to celebrate some sacred festival. It was made while Hannibal was in Italy, and Rome was in great distress, but created much discontent. The Roman ladies, eighteen years after, petitioned for its repeal. Cato opposed the repeal, and satirised the ladies for appearing in public to solicit votes. The tribune Valerius answered the sage's objections, and carried the repeal with the unanimous consent of all the Comitia, Cato alone excepted. Liv. xxxiii.

OPPIANUS, a poet and grammarian of Anazarba in Cilicia in the second century. He composed a poem on Hunting, and another on Fishing, for which Antoninus Caracalla gave him as many golden crowns as there were verses in his poems; they were hence called Oppian's golden verses. He died in the thirtieth year of his age.

OPPELN, a considerable government of Prussian Silesia, containing the principality of Oppeln, Neiss, and Ratibor, together with the Prussian part of Jagerndorf and Troppau, or an area of 5000 square miles, divided into the circles of

| | |
|-------------------|-------------|
| Neisse, | Beuthen, |
| Grotkau, | Plesse, |
| Oppeln, | Falkenberg, |
| Rosenberg, | Ratibor, |
| Strehlitz (Great) | Tost, |
| Lublinitz, | Neustadt, |
| Kosel, | Rybnik, |
| Leobschutz. | |

The entire population amounts to about 450,000, chiefly Catholic. The province is altogether hilly, and often called High or Upper Silesia. It abounds in forests and valuable minerals. In the mountains the old Sclavonic dialect is spoken. The Oder is the chief river, and, though only partially navigable, greatly facilitates the transport of timber, and the other produce of the district. The numerous lakes abound in fish.

The principality of Oppeln, more than a third covered with forests, occupies more than the half of this government. It lies to the south of Breslau and Oels, and is still more backward than the rest, being inhabited almost exclusively by an illiterate race, of Vandal descent. It was governed by its own dukes of the race of Piast, till 1532, when, the family becoming extinct, it fell to Bohemia, and was acquired by Prussia, with the rest of Silesia, in 1742.

OPPELN, the capital of the above principality and government, situated on the Oder, has several churches, a collegiate foundation, a seminary for priests, two monasteries, and an hospital; also some linen manufactures and tanneries. Inhabitants 3200. It is fifty miles south-east of Breslau, and eighty-five north-east of Olmutz.

OPPENAU, a thriving town of Baden. The article of cherry brandy is here a principal object of export; also pitch, turpentine, and tar, prepared in the neighbouring mountains of the Black Forest. Population 1700. Fifteen miles east of Strasburg.

OPPENHEIM, a town of Hesse-Darmstadt, to the west of the Rhine. Population 1700. Here general Sacken's corps of the Prussian army crossed the Rhine on the 1st of January, 1814, in the invasion of France, and the troops took, in the presence of their king, a redoubt, with 700 prisoners and six cannon. Ten miles south by east of Mentz.

OPPENHEIM, a post-town of Montgomery county, New York, on the north bank of the Mohawk River, fifteen miles west of Johnstone; and fifty-six W. N. W. of Albany.

OPPIDO, a large town of Naples, in Calabria Ultra, situated among the mountains which form the south-west extremity of the Appennines. It is the see of a bishop, but was much injured by the earthquake of 1783. Population 8000. Twenty miles north-east of Reggio, and twenty E. N. E. of Messina, in Sicily.

OPIGNERATE, *v. a.* Lat. *opignero*. To pledge; pawn. Obsolete.

The duke of Guise Henry was the greatest usurer in France, for that he had turned all his estate into obligations; meaning that he had sold and *opignero*-rated all his patrimony, to give large donatives to other men. Bacon.

OPPILATE, *v. a.* Lat. *oppilo*. To heap
 OPPIA'TION, *n. s.* } up obstructively: the
 OPPIA'TIVE. } obstruction caused: obstructive.

The ingredients prescribed in their substance accutate the spirits, reclude *oppositions*, and mundify the blood. Harvey.

OPPO'NENT, *adj.* & *n. a.* Latin *opponens*. Antagonist; adverse: one who opposes or takes the opposite side of the dispute or argument.

Inasmuch as ye go about to destroy a thing which is in force, and to draw in that which hath not as yet been received, to impose on us that which we think not ourselves bound unto; that therefore ye are not to claim in any conference other than the plaintiff's or *opponent's* part. Hooker.

How becomingly does Philopolis exercise his office, and seasonably commit the *opponent* with the respondent, like a long practised moderator. Mera.

Be the foundations of this earth were laid,
It was *opponent* to our search ordained,
That joy still sought, should never be attained.

Prior.

We should never argue, or suffer others to argue for victory with our pupils: we should not praise them for cleverness in finding out arguments in support of their own opinion: we should praise their candour and good sense, when they perceive and acknowledge the force of their *opponent's* argument.

Edgeworth.

Joking on the poverty of his *opponent*, he remarks that if his learning would get him a good living he would say something.

Canning.

OPPORTUNE, *adj.* } *Fr. opportune*; *Lat. opportunely*, *adv.* } *opportunus*. Season-
OPPORTUNITY, *n. s.* } *able*; well-timed or
circumstanced; convenient: the adverb following these senses: opportunity is, fit time or place; convenience; propitious; concurrence of circumstances.

He was resolved to choose a war rather than have Bretagne carried by France, being situate so *opportunist* to annoy England either for coast or trade.

Bacon's Henry VII.

There was nothing to be added to this great king's felicity, being at the top of all worldly bliss, and the perpetual constancy of his prosperous successes, but an *opportune* death to withdraw him from any future blow of fortune.

Bacon.

A wise man will make more *opportunities* than he finds. Men's behaviour should be like their apparel, not too straight, but free for exercise.

Id.

Opportunity like a sudden gust,
Hath swelled my calmer thoughts into a tempest.
Accursed opportunity!
That workest our thoughts into desires, desires
To resolutions; these being ripe and quickened,
Thou givest them birth, and bringest them forth to action.

Denham.

Will lift us up in spite of fate,
Nearer our ancient seat; perhaps in view
Of those bright confines, whence, with neighbouring arms

And *opportune* excursion, we may chance
Re-enter heaven.

Milton's Paradise Lost.

The experiment does *opportunist* supply the deficiency.

Boyle.

I had an *opportunity* to see the cloud descend, and, after it was past, to ascend again so high as to get over part of the mountain.

Brown's Travels.

Neglect no *opportunity* of doing good, nor check thy desire of doing it, by a vain fear of what may happen.

Atterbury.

All poets have taken an *opportunity* to give long descriptions of the night.

Brome.

Had it not been for me I am persuaded Dr. Johnson never would have undertaken such a journey, and I must be allowed to assume some merit from having been the cause that our language has been enriched with such a book, &c., as I had such *opportunities* of knowing from what very meagre materials it was composed.

Boswell's Tour.

He who first saw his fellow creature suffer, could not fail to participate in the pain, and endeavour to find out the means of affording relief. *Opportunities* of exercising this useful inclination were never wanting.

Dr. A. Rees.

To protect the peaceable in their ordinary occupations is as much the province of the laws as to provide *opportunities* of discussion, for every purpose to which it is necessarily and practically applicable.

Canning.

OPPOSE, *v. a. & v. n.*
OPPOSELESS, *adj.*
OPPOSER, *n. s.*
OPPOSITE, *adj. & n. s.*
OPPOSITELY, *adv.*
OPPOSITENESS, *n. s.*
OPPOSITION.

Fr. opposer; *Latin oppono, oppositus*. To resist; hinder; act against; put in opposition; place over against, or in front: as a neuter verb, to

act adversely; object: opposeless is, not to be opposed; irresistible: opposer, an antagonist; rival; enemy: opposite, contrary; adverse; placed in front or over against: as a noun substantive, an adversary; opponent: oppositely, corresponds with the senses of opposite as an adjective: opposition is, situation fronting something opposed; resistance; hostility; contrariety of interest, meaning, or measures; inconsistency: and, in a political sense, the party generally opposing those in power, and 'never really,' according to Mr. Wilberforce, 'wishing mischief to the country; but only so much mischief as might drive their opponents out, and place themselves in their room.'

To the best and wisest, while they live, the world is continually a froward *opposite*, a curious observer of their defects and imperfections; their virtues it afterwards as much admireth.

Hooker.

The parts of every true *opposition* do always both concern the same subject, and have reference to the same thing, sith otherwise they are but in shew *opposite*, not in truth.

Id.

There's no bottom, none
In my voluptuousness: and my desire
All continent impediments would o'erbear,
That did *oppose* my will. *Shakespeare. Macbeth.*

Her grace sat down
In a rich chair of state; *opposing* freely
The beauty of her person to the people.

Shakespeare.

Now the fair goddess fortune
Fall deep in love with thee, and her great charms
Misguide thy *opposers'* swords: bold gentleman!
Prosperity be thy page.

Id. Coriolanus.

I could bear it longer, and not fail
To quarrel with your great *opposeless* wills.

Shakespeare.

He is the most skilful, bloody, and fatal *opposite* that you could have found in Illyria.

Id.

He
Cried Oh! and mounted; found no *opposition*
From what he looked for should *oppose*.

Id.

He practised to dispatch such of the nobility as were like to *oppose* against his mischievous drift, and in such sort to encumber and weaken the rest that they should be no impediments to him.

Hayward.

To the' other five;
Their planetary motions and aspects,
In sextile, square, trine and *opposite*,
Of noxious efficacy. *Milton's Paradise Lost.*

Virtue which breaks thro' *opposition*,
And all temptation can remove,
Most shines, and most is acceptable above.

Milton.

Brave wits that have made essays worthy of immortality; yet, by reason of envious and more popular *opposers*, have submitted to fate, and are almost lost in oblivion.

Glanville.

When the church is taken for the persons making profession of the Christian faith, the *catholic* is often added in *opposition* to hereticks and schismatics.

Pearson.

In this fallen state of man religion begins with repentance and conversion, the two *opposite* terms of which are God and sin. *Tillotson.*

They who never tried the experiment of a holy life, measure the laws of God not by their intrinsecal goodness, but by the reluctance and *opposition* which they find in their own hearts. *Id.*

I thro' the seas pursued their exiled race,
Engaged the heavens, *opposed* the stormy main ;
But billows roared and tempests raged in vain. *Dryden.*

The knight whom fate or happy chance
Shall grace his arms so far in equal fight,
From out the bars to force his *opposite*,
The prize of valour and of love shall gain. *Id.*
Nothing of a foreign nature, like the trifling novels by which the reader is misled into another sort of pleasure, *opposite* to that which is designed in an epick poem. *Id.*

He considers Lausus, rescuing his father at the hazard of his own life, as an image of himself when he took Anchises on his shoulders, and bore him safe through the rage of the fire and the *opposition* of his enemies. *Id. Dufrenoy.*

The lesser pair are joined edge to edge, but not *oppositely* with their points downward, but upward. *Grew.*

If all men are not naturally equal, I am sure all slaves are, and then I may, without presumption, *oppose* my single opinion to his. *Locke.*

Particles of speech have divers, and sometimes almost *opposite* significations. *Id.*

Reason can never permit the mind to reject a greater evidence to embrace what is less evident, nor allow it to entertain probability in *opposition* to knowledge and certainty. *Id.*

The use of language and custom of speech, in all authors I have met with, has gone upon this rule or maxim, that exclusive terms are always to be understood in *opposition* only to what they are opposed to, and not in *opposition* to what they are not opposed to. *Waterland.*

A hardy modern chief,

A bold *opposer* of divine belief. *Blackmore.*

This is a prospect very uneasy to the lusts and passions, and *opposite* to the strongest desires of flesh and blood. *Rogers.*

I do not see how the ministers could have continued in their stations, if their *opposers* had agreed about the methods by which they should be ruined. *Swift.*

The subject of difference in political principles was introduced. *Johnson.*—It is much increased by *opposition*. There was a violent Whig with whom I used to contend with great eagerness. After his death I felt my Toryism much abated. *Bonnel's Tour.*

The emphatic speaker dearly loves to *oppose*,
In contact inconvenient, nose to nose,
As if the gnomon on his neighbour's phiz,
Touched with a magnet had attracted his. *Corpor.*

Children, piqued instead of being convinced, hunt only for arguments in their own favour, and are mortified when a good reason is brought on the *opposite* side of the question. *Edgeworth.*

If an administration should succeed him, under which wisdom and prudence produced their usual effects of security and quiet, the right honourable gentleman would be at the head of the most violent and clamorous *opposition* that that country ever witnessed. *Sheridan.*

OPPOSITION, in British politics, is collectively used for the minority in parliament, or that body

of members in both houses who oppose the measures of ministry.

OPPRESS', *v. a.* } Latin *oppressus*. To
OPPRESSION, *n. s.* } crush by severity; over-
OPPRESSIVE, *adj.* } power; subdue: oppres-
OPPRESSOR, *n. s.* } sion is, the art or habit of
such severity or cruelty; or the state of suffering it; hence misery; hardship of any kind; and the dulness of spirit it produces; the adjective and second noun substantive corresponding.

If thou seest the *oppressions* of the poor marvel not at the matter, for he that is higher than the highest regardeth. *Ecclies.*

Israel and Judah were *oppressed* together, and all that took them captives held them fast; they refused to let them go. *Jeremiah.*

I from *oppressors* did the poor defend,
The fatherless, and such as had no friend. *Sandys.*

We're not ourselves,
When nature, being *opprest*, commands the mind
To suffer with the body. *Shakespeare. King Lear.*
Famine is in thy cheeks;
Need and *oppression* stare within thine eyes,
Contempt and beggary hang upon thy back. *Shakespeare.*

Cesar himself has work, and our *oppression*
Exceeds what we expected. *Id. Antony and Cleopatra.*

The cries of orphans, and the *oppressor's* rage,
Had reached the stars. *Dryden.*

Alicia, reach thy friendly arm,
And help me to support thy feeble frame,
That nodding totters with *oppressive* woe,
And sinks beneath its load. *Rowe's Jane Shore.*

We are all subject to the same accidents; and, when we see any under any particular *oppression*, we should look upon it as the common lot of human nature. *Addison.*

Drowsiness, *oppression*, heaviness, and lassitude, are signs of a too plentiful meal. *Arbutnot.*

To ease the soul of one *oppressive* weight,
This quits an empire, that embroils a state. *Pope.*

Alas! a mortal most *opprest* of those
Whom fate has loaded with a weight of woes. *Id.*

Come! by whatever sacred name disguised,
Oppression, come! and in thy works rejoice!
See nature's richest plains to putrid fens
Turned by thy fury. From their cheerful bounds,
See razed the enlivening village, farm and seat. *Thomson.*

In blazing height of noon,
The sun *oppressed*, is plunged in thickest gloom. *Id.*

Power when employed to relieve the *oppressed*, and to punish the *oppressor*, becomes a great blessing. *Swift.*

Has heaven reserved, in pity to the poor,
No pathless waste or undiscovered shore;
No secret inland in the boundless main,
No peaceful desert yet unclaimed by Spain.
Quick let us rise, the happy seats explore,
And bear *oppression's* insolence no more. *Johnson.*

Where individuals are *oppressed*, they combine against their *oppressor*, and oppose cunning and falsehood to power and force: they think themselves released from the connect of truth with their masters, &c. *Edgeworth.*

his head was drooping on his breast,
Fevered, throbbing, and *oppress*;
And o'er his brow so downward bent,
Oft his beating fingers went. *Byron.*

OPPRO'BRIOUS, *adj.* } Lat. *opprobrium*.
OPPRO'BRIOUSLY, *adv.* } Reproachful; dis-
OPPRO'BRIOUSNESS, *n. s.* } graceful; slanderous; scurrilous; blasted with slander or reproach: the adverb and noun substantive corresponding.

Himself pronounceth them blessed, that should
for his name sake be subject to all kinds of ignominy
and *opprobrious* malediction. *Hooker.*

Think you, this little prating York
Was not incensed by his subtle mother,
To taunt and scorn you thus *opprobriously*?
Shakespeare.

I will not here defile
My unstained verse with his *opprobrious* name.
Daniel.

Solomon he led by fraud to build
His temple right against the temple of God,
On the *opprobrious* hill. *Milton.*
They see themselves unjustly aspersed, and vindicate
themselves in terms no less *opprobrious* than
those by which they are attacked. *Addison.*

OPPUGN', *v. a.* } Lat. *oppugno*. To op-
OPPUGNANCY, *n. s.* } pose; resist; attack: op-
OPPUGNER. } position: he who op-
pugns or opposes.

For the ecclesiastical laws of this land we are led
by a great reason to observe, and ye be by no neces-
sity bound to *oppugn* them. *Hooker.*

Take but degree away, untune that string,
And hark what discord follows, each thing meets
In mere *oppugnancy*.

Shakespeare. Troilus and Cressida.

The ingredients reclude oppilations, mundify the
blood, and *oppugn* putrefaction. *Harvey.*

They said the manner of their impeachment they
could not but conceive did *oppugn* the rights of par-
liament. *Clarendon.*

If nothing can *oppugn* his love,
And virtue envious ways can prove,
What cannot he confide to do
That brings both love and virtue too?
Hudibras.

The moderate and degenerate Jews be, upon the
score of being the great patrons of man's free will,
not causelessly esteemed the great *oppugn*ers of God's
free grace. *Boyle.*

Neither the secret envy of those who repine at
these encouragements which God's providence hath
conferred on priests, nor the open malice of those
that furiously *oppugn* their welfare, shall ever over-
whelm them. *Barrow.*

Ramus was one of the first *oppugn*ers of the old
philosophy, who disturbed with innovations the quiet
of the schools. *Johnson.*

OPS, in mythology, the daughter of Cœlus
and Terra, the sister and wife of Saturn, and mo-
ther of Júpiter, Neptune, and Pluto, &c. She
is also called **CYBELE**, **RHEA**, **BONA DEA**,
MAGNA MATER, **TELLUS**, **TRYA**, &c. See these
articles. Lempriere confounds her with Juno,
Proserpina, and even Minerva; but the mytho-
logy of the ancient Greeks and Romans is a
sufficient mass of confusion and inconsistency,
without confounding the mother with her daugh-
ters and grand-daughters. Her festivals were
the Opalia.

OPTABLE, *adj.* } Lat. *optabilis*. Desirable:
OPTATIVE. } optative, expressive of de-
sire.

The verb undergoes in Greek a different formation
to signify wishing, which is called the *optative* mood.
Clarke.

The **OPTATIVE MOOD**, in the Greek grammar,
is that which serves to express an ardent desire
or wish for something. In most languages, ex-
cept the Greek, the optative is only expressed
by prefixing to the subjunctive an adverb of
wishing; as *utinam*, in Latin.

OPTATUS, bishop of Melevia, a town of
Numidia, in Africa, flourished in the fourth cen-
tury, under Valentinian and Valens. He wrote
a book on the Schism of the Donatists, about
A. D. 370, against Parmenian, bishop of that
sect, which was published by Du Pin at Paris,
in fol. 1700. He also wrote The Sacred Geo-
graphy of Africa. He died A. D. 384.

O P T I C S

OPTIC, *adj. & n. s.* } Fr. *optique*; Gr. *οπ-*
 OPTICAL, *adj.* } *ρασ*. Visual; produc-
 OPTICIAN, *n. s.* } ing or relating to vision;
 OPTICS. } the organ, or an instrument, of sight: optical is relating to vision, or to the science of optics: optician, one skilled in that science, or a maker of optical instruments: optics, the science of vision. See below.

Where our master handleth the contractions of pillars, we have an *optick* rule, that the higher they are, the less should be always their diminution aloft, because the eye itself doth contract all objects, according to the distance. *Wotton.*

Our corporeal eyes we find,
 Dazzle the *opticks* of our mind. *Derham.*

Can any thing escape the perspicacity of eyes which were before light, and in whose *opticks* there is no opacity? *Browne.*

It seems not agreeable to what anatomists and optical writers deliver, touching the relation of the two eyes to each other. *Boyle.*

And quickly cold indifference will ensue,
 When you love's joys through honour's *optick* view. *Prior.*

May not the harmony and discord of colours arise from the proportions of the vibrations propagated through the fibres of the *optick* nerves into the brain, as the harmony and discord of sounds arise from the proportions of the vibrations of the air? *Newton's Opticks.*

Why has not man a microscopick eye?
 For this plain reason, man is not a fly:
 Say what the use, were finer *opticks* given,
 T' inspect a mite, not comprehend the heaven? *Pope.*

Those who desire satisfaction must go to the admirable treatise of *opticks* by Sir Isaac Newton. *Cheyne.*

1. OPTICS, as a science, dates its origin but little prior to the time of Alhazen, an Arabian philosopher of the twelfth century; and it may with truth be remarked that almost every thing useful in the science has originated within the last 500 years. The reflection of the rays of light is, indeed, an occurrence too frequent and too obvious to have escaped the notice of the earliest observers: a river or a fountain was the first mirror: its effect was easily imitated, by specula of metal; and, as soon as any philosophical attention was paid to the phenomenon, it was easy to collect the equality of the angles of incidence and reflection; but, although it was well known that an oar, partially immersed in water, no longer appeared straight, it was long before any attempts were made to ascertain the relation between the angles of coincidence and refraction.

2. Some very important facts illustrative of the nature of LIGHT will be found under that article, and we may now proceed to a brief historical outline of the science.

3. Empedocles is perhaps the first person on record that wrote systematically on light. He maintained that it consisted of particles projected from luminous bodies, and that vision was per-

formed both by the effect of these particles on the eye, and by means of a visual influence, emitted by the eye itself. Both of these doctrines were combated by Aristotle, who thought it absurd to suppose that a visual influence should be emitted by the eye, and that it should not enable us to see in the dark; and who considered it as more probable that light consisted in an impulse, propagated through a continuous medium, than in an emanation of distinct particles. Light, he says, is the action of a transparent substance; and, if there were absolutely no medium between the eye and any visible object, it would be absolutely impossible that we should see it.

4. It is said that Archimedes made a compound burning mirror, of sufficient power to set on fire the Roman ships: in this form the story is scarcely probable, although the possibility of burning an object at a great distance by a collection of plane mirrors has been sufficiently shown by the experiments of Buffon. It is, however, not unlikely that Archimedes was acquainted with the properties of reflecting surfaces, and that he confirmed his theories by some experimental investigations. The work on catoptrics, attributed to Euclid, contains the determination of the effects of reflecting surfaces of different forms; but it is not supposed to be genuine. The existence and the magnitude of the atmospheric refraction were well known to Ptolemy, and a treatise of this astronomer on the subject is still extant in MS.

5. The mathematical theory of optics, or the science of dioptrics and catoptrics made some advances in the middle ages from the labors of Alhazen and Vitellio. Alhazen was mistaken in some of his propositions respecting refraction; Vitellio, a native of Poland, gave a more direct theory of this subject, and constructed a table of refractive densities, showing the supposed proportions of the angles of incidence and refraction in the respective mediums.

6. The invention of the magic lantern is attributed to Roger Bacon, and the lens was soon afterwards commonly applied to the assistance of defective sight. It has been much disputed whether or not Bacon was acquainted with telescopes; the prevalent opinion is, that the passages which have been alleged to prove it are insufficient for the purpose; but there is reason to suspect, from the testimony of Recorde, who wrote in 1551, not only that Bacon had actually invented a telescope, but that Recorde himself knew something of its construction. Digges, also, in a work published in 1571, has a passage of a similar nature; and, from Bacon's own words, it has been conjectured that an instrument resembling a telescope was even of much higher antiquity. But the first person who is certainly known to have made a telescope is Jansen, a Dutchman, whose son, by accident, placing a concave and a convex spectacle glass at a little distance from each other, observed the increased apparent mag-

nitude of an object seen through them; the father upon this fixed two such glasses in a tube a few inches long, and sold the instrument in this form. He also made some telescopes of greater powers, and one of his family discovered a satellite of Jupiter with them. Galileo had heard of the instrument, but had not been informed of the particulars of its construction; he re-invented it in 1609, and, the following year, rediscovered also the satellite which Jansen had seen a little before.

7. It was, however, Kepler that first reduced the theory of the telescope to its true principles; he laid down the common rules for finding the focal lengths of simple lenses of glass; he showed how to determine the magnifying power of the telescope, and pointed out the construction of the simple astronomical telescope, which is more convenient for accurate observations than the Galilean telescope, since the micrometer may be more easily applied to it; a third glass, for recovering the erect position of the object, was afterwards added by Scheiner, and a fourth, for increasing the field of view, by Rheita. Kepler made also some good experiments on the nature of colored bodies, and showed the inverted situation of the image formed on the retina of the eye. Maurolycus of Messina had demonstrated, in 1575, that the pencils of light are brought to focal points on the retina; Kepler's observations were thirty or forty years later.

8. The next great step in optics was made by De Dominis, who in 1611 first explained the cause of the interior or primary rainbow, and this was soon followed by a still more important discovery respecting the nature of refraction, first made by Snellius, who ascertained, about 1621, that the sines of the angles of incidence and refraction are always in the same proportion to each other at the same surface; he died, however, in 1626, without having made his discovery public. Descartes is generally supposed to have seen Snellius's papers, although he published this law of refraction without acknowledging to whom he was indebted for it. Descartes also explained the formation of the secondary rainbow, and truly determined the angular magnitude of both the bows from mathematical principles; he did not, however, give a sufficient reason for the production of colors in either case. Descartes imagined light to consist in motion, or rather pressure, transmitted instantaneously through a medium infinitely elastic, and colors he attributed to a rotatory motion of the particles of this medium. He supposed that light passed more rapidly through a denser medium than through a rarer; other philosophers about the same time maintained a contrary opinion, without deciding with respect to any general theory of light: thus Fermat and Leibnitz deduced, on this supposition, the path of refracted light from the natural tendency of every body to attain its end by the shortest possible way; and Barrow derived the same law, in a more geometrical manner, from a similar hypothesis respecting the velocity of light, by considering a pencil of light as a collection of collateral rays influencing each other's motions. We are indebted to this learned mathematician for the first accurate investigation of the proper-

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ties of refracting and reflecting surfaces and for the most general determination of the situations of focal points.

9. The industrious Mr. Boyle had noticed with attention the phosphorescence of diamonds, the colors produced by the effect of scratches on the surfaces of polished metals, and the diversified tints which a bubble or a film of soapy water usually assume. His assistant, Dr. Hooke, investigated these and other similar appearances with still greater accuracy, and proposed, in his *Micrographia*, which was published in 1665, a theory of light considerably resembling that of Descartes: he supposes that light is an impulse propagated through a medium highly, but not infinitely, elastic; that refraction is produced by the readier transmission of light through the denser medium, and that difference of color consists from the law of the different impulse constituting colored light, so that red and blue differ from each other in the same manner as the sound of a violin and of a flute. He explained the colors of thin plates from the interference of two such impulses partially reflected from the upper and under surface; but the hypothesis which he assumed, respecting the nature of colors, renders this explanation wholly inadequate; nor were the phenomena at that time sufficiently investigated for a complete solution of the difficulties attending them.

10. It was still believed that every refraction actually produced color, instead of separating the colors already existing in white light; but in the year 1666 Newton first made the important discovery of the actual existence of colors of all kinds in white light, which he showed to be no other than a compound of all possible colors, mixed in certain proportions with each other, and capable of being separated by refraction of any kind.

11. About the same time that Newton was making his earliest experiments on refraction, Grimaldi's *Treatise on Light* appeared; it contained many interesting experiments and ingenious remarks on the effects of diffraction, which is the name that he gave to the spreading of light in every direction upon its admission into a dark chamber, and on the colors which usually accompany these effects. He had even observed that in some instances the light of one pencil tended to extinguish that of another, but he had not ascertained in what cases and according to what laws such an interference must be expected.

12. The discoveries of Newton were not received without some controversy either at home or abroad; the essential points of his theory were, however, soon established; but Dr. Hooke very warmly opposed the hypothesis which Newton had suggested respecting the nature and propagation of light. On this subject Newton professed himself by no means tenacious; he was not, however, convinced by Dr. Hooke, and disliked the dispute so much that he deferred the publication of his treatise on optics till after Hooke's death in 1703. Very soon after his first communication to the Royal Society, in 1672, he had sent them a description of his reflecting telescope, which was perhaps the first that had been constructed with success; although

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Gregory had invented his instrument some years before, and a plan of a similar kind had been suggested by Eskinard as early as 1615. The principal parts of the treatise on optics had been communicated at different times to the Royal Society; besides the experiments on refraction, and the theory of the rainbow, they consist of an elegant analysis of the colors of thin transparent substances, in which the phenomena are reduced to their simplest forms, and of a collection of miscellaneous experiments on the colors produced in cases of inflection or diffraction.

13. With respect to the nature of light, the theory which Newton adopted was materially different from the opinions of most of his predecessors. He considered indeed the operation of an ethereal medium as absolutely necessary to the production of the most remarkable effects of light, but he denied that the motions of such a medium actually constituted light; he asserted, on the contrary, that the essence of light consisted in the projection of minute particles of matter from the luminous body, and maintained that this projection was only accompanied by the vibration of a medium as an accidental circumstance, which was also renewed at the surface of every refractive or reflective substance.

14. In the mean time Bartholin had called the attention of naturalists and opticians to the singular properties of the Iceland crystal, and had hastily examined the laws of its unusual refraction. On this subject Huygens had been much more successful; his analysis of the phenomena of the double refraction is a happy combination of accurate experiment with elegant theory; it was published in 1690, making a part of his treatise on light, the fundamental doctrines of which he had communicated to the academy of Paris in 1678. They scarcely differ in their essential parts from those of our countryman Dr. Hooke, but the subject of colors Huygens has left wholly untouched. Roëmer had then lately made the discovery of the immense velocity with which light passed through the celestial regions, by observing the apparent irregularities of the eclipses of Jupiter's satellites; and Huygens readily admitted this property into his system; although Hooke, by a singular caprice, professed himself more ready to believe that the propagation of light might be absolutely instantaneous, than that its motion could be successive, and yet so inconceivably rapid. The merits of Huygens in the mathematical theory of optics were no less considerable than in the investigation of the nature of light; his determination of the observations of lenses was the first refinement on the construction of telescopes.

15. In the year 1720 Dr. Bradley had the good fortune to discover both the existence and the cause of the aberration of the fixed stars. He had for some time observed an irregularity in the places of the stars, which he was wholly unable to explain, and the idea of attributing it to a combination of the effect of the earth's motion in its orbit, with the progressive motion of light, occurred to him first as he happened to observe the apparent direction of the wind on board of a boat which was moving in a transverse direction. He also determined with accuracy the magnitude of the atmospherical refraction, which had been

theoretically investigated by Newton and by Taylor, but never before practically ascertained with sufficient precision. The formula, which Bradley appears to have deduced from observation only, agrees precisely with an approximation which was obtained by Simpson from calculation; but it cannot be considered as rigidly accurate.

16. The optics of Bouguer were first published in 1729, and an improved edition appeared thirty years afterwards; the merits of this author in the examination of the properties of a variety of substances, with respect to the transmission and reflection of light in different circumstances, and in the comparison of lights of different kinds, require to be mentioned with the highest commendation. Dr. Porterfield's investigations of the functions of the eye tended greatly to illustrate the economy of this admirable organ, and some valuable remarks of Dr. Jurin on the same subject were soon after published in Dr. Smith's elaborate treatise on optics, which contains all that had been done at that time with respect to the mathematical part of the science.

17. The invention of achromatic telescopes is with justice universally attributed to our countryman Mr. Dollond; but there is reason to believe that he was not absolutely the first author of the improvement. Mr. Hall, a gentleman of Worcestershire, is said to have discovered, about 1729, Sir Isaac Newton's mistake, in supposing that the rays of different colors must of necessity be equally separated by all surfaces which produce an equal mean refraction; and, by combining the different dispersive properties of different kinds of glass, he constructed, in 1733, several compound object glasses, which were calculated not only for avoiding all appearance of color, but also for correcting the imperfect refractions of the spherical surfaces of the separate lenses. He did not, however, make known the particulars of his investigations, and his invention was soon wholly forgotten. It was in consequence of a discussion with Euler, Klingenstierna, and some other mathematicians, that Mr. Dollond was led to make experiments on the refraction of different kinds of glass; these gentlemen had not questioned the general truth of Newton's opinion respecting the dispersion of the different colors, but Euler had asserted that the eye itself produced a refraction free from the appearance of color, and Klingenstierna had shown the possibility of producing a deviation by refraction, without a separation of color, according to the laws of refraction laid down by Newton himself. When Dollond had once discovered the material distance which exists between the dispersive properties of flint glass and of crown glass, it was easy to produce the combination required; but this ingenious artist was not satisfied with the advantage of freedom from colors only; he adjusted the forms and apertures of his lenses in the most skilful manner to the correction of aberrations of various kinds, and he was also particularly fortunate in being able to obtain, about the time of his discovery, a glass of a quality superior to any that has been since manufactured.

18. The opinion of Euler respecting the eye was, however, by no means well founded; for the

eye acts very differently in rays of different colors, as we may easily observe by viewing a minute object in different parts of a beam of light, transmitted through a prism. It must be allowed that this great mathematician was less fortunate in his optical theories than in many other departments of science; his mathematical investigations of the effects of lenses are much more intricate and prolix than the subject actually requires, and, with respect to the nature and propagation of light, he adopted several paradoxical opinions. Assuming the theory of Huygens, with the additional hypothesis respecting the nature of colors which had been suggested by Newton, and maintained by Pardies and Malebranche; that is, that the difference of colors, like that of tones in music, depends on the frequent differences of the vibrations constituting light; he imagined that opaque bodies are not seen by reflected light, but that their particles are agitated by the impulse of the light which falls on them, and that the vibrations of these particles render the bodies again visible in every direction; he also conceived that the undulations of light are simply propagated through the solid substances of transparent mediums, in the same manner as sound travels through the air. But, on these suppositions, all bodies would have the properties of solar phosphori, and the refraction of the rarest of natural bodies would be incomparably greater than that of the densest is actually found to be: and on the whole, although the character of Euler has been so highly and so deservedly respected as to attach a certain degree of authority to all his opinions, so that in this instance the name of Huygens has been almost superseded by that of Euler, yet in fact he has added no augmentative evidence whatever to the theory, but, by inaccurate and injudicious reasoning, has done a real injury to the cause which he endeavoured to support.

19. The researches of Lambert may be considered as a continuation of those of Bouguer; they present us with many interesting observations on the natural history of light, and the properties of various bodies with regard to it. Mr. Lambert first ascertained that a luminous surface emits its light very nearly with equal intensity in all directions, so that any part of it appears almost equally brilliant to an eye placed in any direction, while the light thrown by each square inch or square foot of the surface in any direction differs according to the obliquity of that direction. The mathematical theory of optics is considerably indebted to the labors of Clairault, D'Alembert, and Boscovich; Jeaurat, Beguelin, Redern, and Klugel, have also continued the investigation; their calculations may be of considerable utility to the practical optician; but it requires the ingenuity of a Dollond or a Ramsden to apply the whole of the results to any useful purposes.

20. The experiments of Mazcas on the colors of their plates are mere repetitions of those of Newton, under disadvantageous circumstances. Mr. Dutour has, however, considerably diversified and extended these experiments, as well as those on the colors which are produced in diffracted light, yet without obtaining any general

results of importance. Corparetti's experiments on inflection have every appearance of accuracy; but they are much too intricate to be easily compared with each other, or with those of former observers.

21. The late Dr. Priestley rendered an essential service to the science of optics, considered as a subject for the amusement of the general reader, by an elegant and well-written account of the principal experiments and theories, which had been published before the year 1770. But this work is very deficient in mathematical accuracy; and the author was not sufficiently master of the science to distinguish the good from the indifferent.

22. Mr. Delaval's experiments on colors appear to show very satisfactorily, that all the coloring substances in common use owe their tints to rays, which are separated from white light during its passage through them, and not, as Newton supposed, to the reflection of a particular color from the first surface. It has been observed that Kepler and Zuechius had long ago made experiments nearly similar to those of Mr. Delaval. Dr. Robert Darwin's investigation of the effects of strong lights on the eye appears to comprehend almost all possible varieties of these ocular spectra; but it does not lead to any fundamental analogy capable of explaining the most intricate of them.

23. The phenomena of the unusual atmospheric refraction, which frequently produces double or triple images of objects seen near a heated surface, have been successfully illustrated by Mr. Huddart, Mr. Vince, and Dr. Wollaston; so that at present there appears to be little doubt remaining with respect to their origin. Dr. Wollaston's instrument, for the measurement of refractive densities, very much facilitates the examination of the optical properties of substances of various kinds; he has applied it very successfully to the confirmation of Huygens's theory of double refraction; he has corrected the common opinion respecting the division of the prismatic spectrum; he discovered, without being acquainted with the observations of Ritter, the dark rays which blacken the salts of silver; and he has remarked a single property in some natural as well as artificial crystals, which appear of one color when viewed in the direction of the axis, and of another when in a transverse direction.

24. To Dr. Herschel the sciences of optics and astronomy are equally indebted. He has carried the construction of the reflecting telescope to a degree of perfection far exceeding all that had been before attempted; and the well known improvements which astronomy has derived from his observations are numerous and important. In the course of his researches for the attainment of his more immediate objects he has also had the good fortune to discover the separation of the rays of heat from those of light by refraction; a fact which has been sufficiently established by the experiments of several other persons.

25. We must now furnish a brief sketch of the labors of the experimental philosophers:—Euclid, the well known author of the Elements of Geometry, appears to have been the first amongst the ancients celebrated for his know-

ledge of optical science. This distinguished geometer did not venture to offer a decided opinion respecting the nature of light; but contented himself with remarking some of its ordinary properties, and applying them to the purposes of human vision. Aristotle has given a definition of light similar to that of motion—the act or energy of a transparent body, inasmuch as it is transparent; and, in proceeding to speculate upon its nature, he altogether denied it to be a substance. This opinion he founded upon the apparently instantaneous transmission of light in any direction. For, as he argued on the general rule, that bodies move with a velocity inversely as the quantity of matter which they contain, light could not, in his estimation, be a material substance, or, the inconceivable velocity of its particles could not be established. As it is not our intention to present an analysis of the opinions of the ancients respecting the nature of light, we shall proceed to a period in its history of the utmost importance to the science of optics; we refer to the foundation of the Cartesian school of philosophy. What has been said respecting the opinions of the ancients is merely intended to show that Descartes, in denying the materiality of light, has only pursued the path marked out by his predecessor Aristotle; though it must be acknowledged that his views of the subject are far more scientific.

26. The opinion of Descartes, and many other modern philosophers of the French school, was, that light is an extremely subtle fluid, pervading the whole sphere of the universe, and receiving from bodies of a luminous nature a series of agitations similar to those excited in a sonorous body by the intervention of the atmospheric air. This theory has undergone some revision, and been somewhat corrected by such modern enquirers as have adopted it; who, to reconcile it with the ordinary and received ideas of the reflection and propagation of light, have supposed its particles to be elastic, and, instead of existing in a state of perfect contiguity, to have small intervals between them. According to this hypothesis, therefore, a ray of light consists of a succession of molecules, having a number of oscillations continually repeated. Now, a very great objection to this theory of the French philosopher appears to exist in the rectilinear direction of light; a principle that was discovered by Euclid, and has been subsequently confirmed by minute and conclusive experiments. For, upon this supposition, light would not only be propagated in a direct line, but, like sound, would be transmitted in every direction; the consequence of which would be the exclusion of night, and the impossibility of a phenomenon that has been frequently exhibited in the total eclipse of the sun.

27. Notwithstanding these great objections to the theory of light we have referred to, so great was the estimation in which the French philosopher was held by the scientific world during the age in which he lived, that no one ventured to dispute its accuracy, until it found an irresistible opponent in Sir Isaac Newton. The theory of this great mathematician and experimentalist, to which modern philosophy has given a decided

preference, consists in the materiality of light. According to this principle, the origin of light is to be traced to an actual emanation, or emission, of particles of luminous bodies thrown off in continued succession, and succeeding one another without interruption. The objections which have been urged against this hypothesis are altogether inconsistent with a just idea of the true nature of light, and possess none of that force by which the objections to the hypothesis of Descartes are accompanied. It has been objected, that, upon the indulgence of this supposition, the rays of light continually emitted from the sun and stars would interfere with each other; and, consequently, prevent their procedure in a rectilinear direction. This difficulty, which is certainly the greatest that has hitherto been adduced, may be readily obviated by taking into consideration the extreme minuteness of the luminous particles, and the disparity which there is between the length of their diameters and relative distance from each other.

28. Having adverted to the Newtonian theory of the materiality of light, it now becomes an object of considerable importance and interest to investigate the nature of its particles. We have already hinted at their extreme minuteness. This may be illustrated by reference to a very simple experiment. If a small hole be made with a needle in a sheet of paper, a spectator lying in a position horizontal to the surface of the earth, and looking through the aperture thus made, would be able to see all the objects in the celestial hemisphere. Now, upon the principle we have stated above, the rays of light, proceeding from the several objects of vision to which the eye of the spectator has been directed, must, of necessity, pass through the aperture at once, without the slightest collision of their particles. Nor will it appear incredible that these myriads of rays should be transmitted through the aperture without the appearance of interruption, when we consider their relative proportion to each other. The utmost efforts of human skill and ingenuity have been directed to the construction of the most delicate optical instruments (as in the case of solar microscopes); and, although they have succeeded in refracting the rays of light to an almost inconceivable extent, yet have hitherto experienced an entire failure in the attempt to discover the distinct particles of this subtle fluid.

29. Another experiment, in illustration of the extreme minuteness of the particles of light, is equally conclusive. If a candle be lighted and placed on an elevation, and no object intervene to obstruct the progress of its rays, it will diffuse itself over an entire space of two miles and upwards in every direction, and form, in itself, a concentric circle, having a diameter of four miles in extent; and this distribution of rays is effected without any sensible diminution of the original luminous body. If the principles we have stated need further confirmation, we may refer to the passage of light through the pores of diamonds, and other gems of a vitreous nature, which have hitherto eluded the detection of the most accurate microscopes.

30. The inconceivable velocity of light is a

Fig. 1.

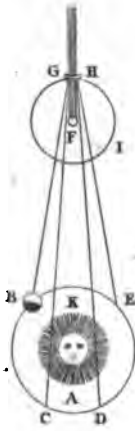


Fig. 7.

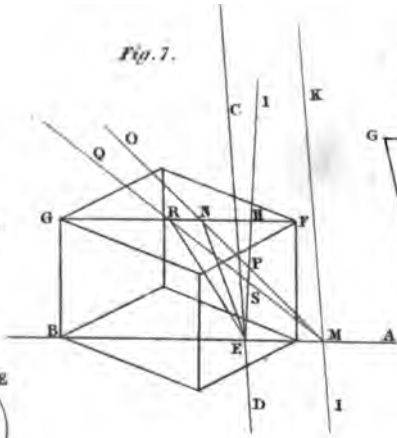


Fig. 8.

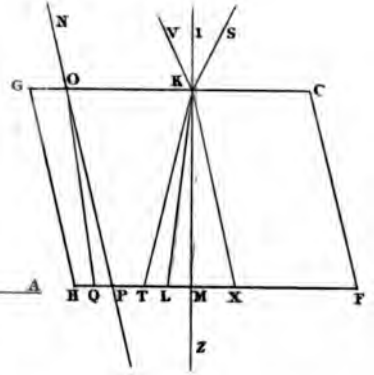


Fig. 3.

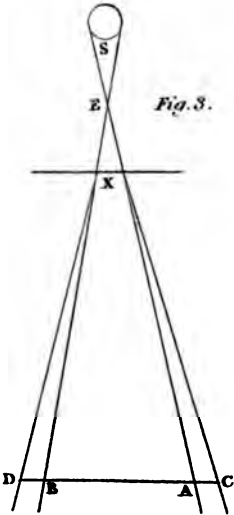


Fig. 5.

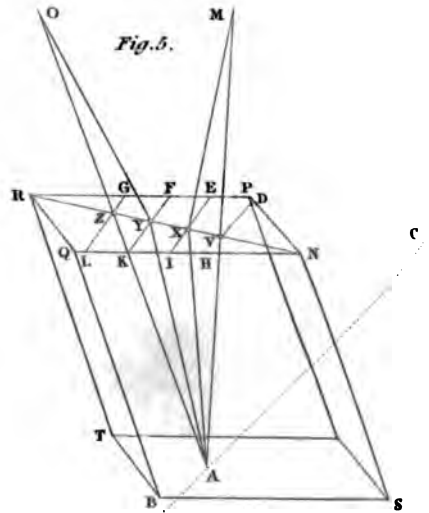


Fig. 2.

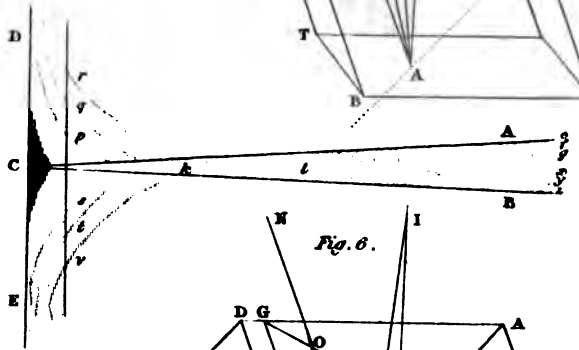


Fig. 4.

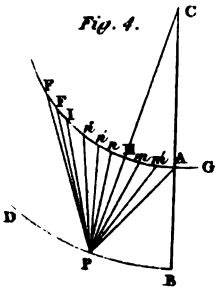
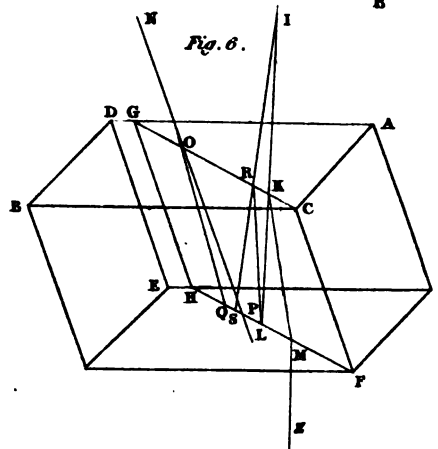


Fig. 6.



principle which may be no less satisfactorily explained than the minuteness of its particles. The propagation of light was, for a long period, supposed to be instantaneous; because no method that had been adopted had succeeded in marking the degree of its velocity. Astronomers had previously ascertained the fact, that the distance of the sun, the great source of light, from the earth, is about 95,000,000 of miles; and that a cannon ball, travelling with uniform velocity from the earth, would scarcely measure the distance in twenty-five years. The fixed stars had been previously determined to be still more remote; and yet the rays of light were known to be emitted from all these luminaries, and to arrive at the earth, comparatively, in a very short time. But, whilst the general fact of the rapidity of light might have been felt to be fully established by these familiar occurrences, it was evident that they could furnish no data by which to ascertain the degree of its velocity. Rømer, a Danish philosopher, who flourished in the seventeenth century; and Cassini, an astronomer born at Piedmont in 1635, discovered a rule by which to determine this velocity. They observed the eclipses of the satellites of Jupiter, and discovered that they are visible to us about eight minutes sooner (according to Dr. Bradley, eight minutes and thirteen seconds), than they ought to be when the earth is placed between the sun and this planet. On the other hand, it was remarked that, when the sun was between the planet Jupiter and the earth, the appearance of these eclipses was first observed about eight minutes later than it ought to have been, from accurate calculations previously made. Hence it was inferred that light occupies about eight minutes in traversing the distance between the sun and earth, which we have already stated has been estimated at about 95,000,000 of miles.

31. The above will be better understood by referring to plate I, OPTICS, fig. 1. Let A be the sun, and BC DE the annual orbit of the earth round the sun; let the small circle at F represent the planet Jupiter, GHI the orbit of the nearest satellite, which, entering the shadow of Jupiter at G, comes out at the point H. When the earth is at B, in its annual progress round the sun, and the satellite is observed to come out of the shadow, the same emersion will be again perceived in $42\frac{1}{2}$ hours. Suppose the earth to remain constantly at B, then, in $42\frac{1}{2}$ hours multiplied by 50 (or $42\frac{1}{2} \times 50 = 2125$ hours), there would be fifty distinct emersions perceptible. Let the earth, however, be removed further from Jupiter towards C; then, if the doctrine of Descartes be not true, or, in other terms, if a portion of time be requisite for the transmission of light, the emersion of the satellite must be obscured as much later than $42\frac{1}{2}$ hours $\times 50$ as the time may amount to—that is, occupied in the transmission of light over the space KC, which is the difference of the spaces CG and KG. In fact, the time consumed by the passage of light over the space KBC must be added to $42\frac{1}{2}$ hours $\times 50$, making $42\frac{1}{2} \times 50 = 2125$ hours + eight

minutes; or, according to Dr. Bradley's computation, eight minutes and thirteen seconds.

32. To afford a more simple illustration of the prodigious velocity of light, we may refer to many facts of daily occurrence. For instance, we perceive the flash of a gun; but, perhaps, a second or two may elapse before we hear the report produced by its discharge. Of the same nature is the flash of lightning which illuminates the celestial hemisphere, and may be succeeded by the peal of thunder after the lapse of several minutes. Hence, we infer, that, whatever may be the rate at which sound travels, the rapidity of light is far greater.

33. The rectilinear propagation of light was known to the ancients; and in modern times has been abundantly confirmed by experiments. Every luminous body emits continually small particles of matter from its surface, which proceed in straight lines, and in every direction, until they meet with some resisting medium. When this, therefore, occurs—when the rays of light fall on the superficies of a dense and opaque substance, through which it is impossible for them to pass, they do not travel round it, but are altogether stayed in their course; and must, either by turning back again, form what philosophers call the angle of incidence, or be completely absorbed. No contrivance of man has hitherto been able to cause them to move in a curvilinear direction.

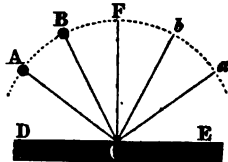
34. We have already stated the immense velocity with which light is emitted from the sun's body, and it will be easy to conceive that it cannot suffer any change in velocity or direction, till it meets with some ponderable matter. In approaching any planetary body, such as our earth, we have reason to believe that they are mutually attracted. Rays falling perpendicularly upon the atmosphere are equally attracted on every side, and come in a straight line to the earth; while those rays which fall obliquely are hent out of their original direction; and, since the atmosphere is not of uniform density, such oblique rays will come to the earth in curved lines. If our atmosphere were of uniform density, the refraction would not be altered; but the oblique rays falling upon its surface would be reflected in a very great degree; a circumstance which would deprive us of much of the sun's light. No doubt a great quantity of light becomes extinguished in its passage through the aerial medium, as we may justly learn from the difference of intensity in the light at different altitudes of the sun: but how much must this loss of light appear, when we recur to the statement already made, namely, that the whole effects of the sun's light would be lost by passing through 679 feet of sea-water, and that the same effect would take place by its passage through 3,110,310 feet of air!

35. The following is a table from M. Bouguer, showing the intensity of the sun's light at different altitudes, and the thickness of air it has to penetrate at each angle.

| Sun's altitude. | Thickness of air in toise. | Intensity of light, the whole being 10,000. |
|-----------------|-------------------------------|---|
| 90° | 3911 | 8123 |
| 80 | 3971 | 8098 |
| 70 | 4162 | 8016 |
| 66 11 | 4295 | 7968 |
| 65 | 4315 | 7951 |
| 60 | 4516 | 7866 |
| 55 | 4776 | 7759 |
| 50 | 5104 | 7624 |
| 45 | 5530 | 7454 |
| 40 | 6086 | 7237 |
| 35 | 6813 | 6963 |
| 30 | 7784 | 6613 |
| 25 | 9191 | 6136 |
| 20 | 11,341 | 5474 |
| 19 16 | 11,744 | 5358 |
| 19 | 11,890 | 5316 |
| 18 | 12,515 | 5143 |
| 17 | 13,220 | 4954 |
| 16 | 14,000 | 4753 |
| 15 | 14,880 | 4535 |
| 14 | 15,880 | 4301 |
| 13 | 17,012 | 4050 |
| 12 | 18,344 | 3773 |
| 11 | 19,908 | 3472 |
| 10 | 21,745 | 3149 |
| 9 | 23,975 | 2797 |
| 8 | 26,672 | 2423 |
| 7 | 29,996 | 2031 |
| 6 | 34,309 | 1616 |
| 5 | 39,893 | 1201 |
| 4 | 47,480 | 802 |
| 3 | 58,182 | 454 |
| 2 | 74,429 | 192 |
| 1 | 100,930 | 47 |
| 0 | 138,823 | 6 |

36. When a ray of light falls upon the surface of a body it is either reflected, absorbed, and extinguished, or transmitted. And under some circumstances all these effects take place.

37. If the object be at A, oblique to the surface DE of the looking-glass, and a person wishes to see it in the glass at C, the eye must be at *a*, because the angle of incidence ACF is equal to the angle of reflection FCA. If the object be at B the eye must be at *b* to see it at C in the glass; for the angle of incidence BCF is equal to the angle of reflection FCB.



38. The reflection of the ray depends, 1st, Upon the nature of the body; 2dly, Upon the

state and color of the surface; and 3dly, Upon the quantity of the angle of incidence. Under all these circumstances, however, the angle at which the ray is reflected is equal to the angle of incidence. The same laws, therefore, which govern the collision between perfectly elastic bodies and absolutely hard surfaces, may be applied to the reflection of light. Of the different bodies which reflect light, metals possess this power in the greatest degree, and perhaps in proportion to their density and hardness. Smooth or polished surfaces reflect more light than rough ones.

39. Of colored surfaces the lightest colors reflect the most; hence the whitest metals make the best reflectors. The order will, therefore, in all probability, be as follows, beginning with the best reflectors:—white, yellow, red, blue, black. The two extremes are very striking in the well known experiment of two pieces of cloth, one white and the other black, laid on the surface of snow in the sun. The black piece very soon sinks into the snow, from absorbing a greater quantity of light, which causes the heat. The white piece reflects a greater portion, and is longer in becoming heated. With regard to the quantity of reflection, as affected by the angle of the incidence, it is found that opaque bodies are more heated as the rays strike their surfaces more perpendicularly, and the quantity of light which enters transparent bodies is the same. In both instances, therefore, more light enters the bodies, and less is reflected. In the first instance the light which is not reflected becomes extinguished, producing heat; in the second it is transmitted, still retaining the property of light. Hence, therefore, we ought to conclude that the reflection will be inversely as the angle of incidence, supposing the angle to be formed by the ray and the surface of the medium.

40. M. Bouguer has informed us that the light reflected from a surface of mercury, when the angle of incidence was $11^{\circ} 30'$, was only equal to one-fourth of the whole, and he thinks it probable that no substance reflects more. It is certain, however, that polished silver reflects much more. The same philosopher observes that the metallic reflectors change less in their power of reflection with the angle of incidence. He made the following experiment with polished black marble:—At an angle of $3^{\circ} 35'$ with the reflecting surface, $\frac{1}{6}$ were reflected, the whole being unity; at 15° of incidence $\frac{1}{156}$ were reflected; at 30° , $\frac{1}{551}$; and at 80° , $\frac{1}{523}$. The rest of course became extinguished, and would heat the marble.

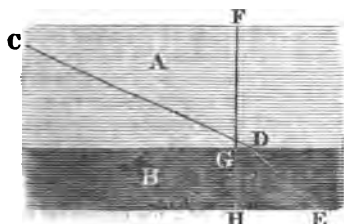
41. A similar diminution of the reflective power, with the angle of incidence, is observed in transparent bodies by the same author. The following table gives the results with water and plate glass:—

| Angle of incidence. | The quantity of light reflected, the whole being 1000. | |
|---------------------|--|-------------------|
| | From water. | From plate glass. |
| 0 | 721 | |
| 1 | 692 | |
| 1½ | 669 | |
| 2 | 639 | |
| 2½ | 614 | 584 |
| 5 | 501 | 543 |
| 7½ | 409 | 474 |
| 10 | 433 | 412 |
| 12½ | 271 | 356 |
| 15 | 211 | 299 |
| 17½ | 178 | |
| 20 | 145 | 222 |
| 25 | 97 | 157 |
| 30 | 65 | 112 |
| 40 | 34 | 57 |
| 50 | 22 | 34 |
| 60 | 19 | 27 |
| 70 | 18 | 25 |
| 80 | 18 | 25 |
| 90 | 18 | 25 |

42. The reflections in this instance are partly made from the upper, and the rest from the under surface. The remainder of the 1000 parts are transmitted, with the exception of a few which are in all probability extinguished.

43. That, under certain circumstances, the rays of light are extinguished, even in transparent bodies, is rendered highly probable by the above enquirer. M. Bouguer tells us that, if our atmosphere were 518,385 toises in height, we should have no light from the sun, even in his meridian splendor. It has been estimated that, of the horizontal sun-beams passing through about 200 miles of air, $\frac{1}{30170}$ th part only reaches us.

44. The nature of REFRACTION will be fully discussed under that department of our work, and we only allude to it in the present instance to illustrate the passage of a ray of light through media differing in their density. In the accompanying diagram A is a medium of air, B, a me-



dium of water, or plain glass. The ray CD falling obliquely on the surface of the medium B, is bent at D, and goes on in the direction DE. But the ray FG, falling perpendicularly on the surface of the medium B, goes on in the same straight direction GH.

45. Light, in passing within a certain distance of the surface of bodies, is bent so as to form

apparently a rectilinear angle at that place. Thus, if a small hole be made in the shutter of a window of a darkened room, and the light of the sun be permitted to pass through it, the image of the sun, or white spot which is formed upon a screen placed to receive that light in the room, will be found to be larger than it ought to be if right lined rays proceeded from the various points of the sun's surface, and passed through the hole to the screen; hence it appears that they are bent at the hole; for otherwise the image would be smaller than experience shows it to be.

46. This property of light was not discovered till about the middle of the seventeenth century. The person who first made the discovery was F. Grimaldi; at least he first published an account of it in his treatise *De Lumine, Coloribus, et Iríde*, printed in 1666. Dr. Hooke, however, laid claim to the same discovery, though he did not publish his observations till six years after Grimaldi.

47. Dr. Hooke, having made his room completely dark, admitted into it a beam of the sun's light by a very small hole in a brass plate fixed in the window shutter. This beam, spreading itself, formed a cone, the apex of which was in the hole, and the base was on a paper, so placed as to receive it at a distance. In this image of the sun, thus painted on the paper, he observed that the middle was much brighter than the edges, and that there was a kind of dark penumbra about it, of about a sixteenth part of the diameter of the circle; which penumbra, he says, must be ascribed to a property of light, which he promised to explain.—Having observed this, at the distance of about two inches from the former, he let in another cone of light; and, receiving the bases of them at such a distance from the holes as that the circles intersected each other, he observed that there was not only a penumbra, or darker ring, encompassing the lighter circle, but a manifest dark line, or circle, which appeared even where the limb of the one interfered with that of the other.

48. The shadows of all bodies, metals, stones, glass, wood, horn, ice, &c., in this light were bordered with three parallel fringes, or bands of colored light, of which that which was contiguous to the shadow was the broadest and most luminous, while that which was the most remote was the narrowest, and so faint as not easily to be visible. It was difficult to distinguish these colors unless when the light fell very obliquely upon a smooth paper, or some other smooth white body, so as to make them appear much broader than they would otherwise have done; but in these circumstances the colors were plainly visible, and in the following order. The first or innermost fringe was violet, and deep blue next the shadow, light blue, green, and yellow in the middle, and red without. The second fringe was almost contiguous to the first, and the third to the second; and both were blue within and yellow and red without; but their colors were very faint, especially those of the third. The colors, therefore, proceeded in the following order from the shadow: violet, indigo, pale blue, green, yellow, red; blue, yellow, red; pale blue, pale yellow, and red. The shadows made by

scratches and bubbles in polished plates of glass, were bordered with the like fringes of colored light. By looking on the sun through a feather, or black riband, held close to the eye, several rainbows will appear, the shadows which the fibres or threads cast on the retina being bordered with the like fringes of colors. Measuring these fringes and their intervals, with the greatest accuracy, he found the former to be in the progression of the numbers, $1, \sqrt{\frac{1}{2}}, \sqrt{\frac{1}{3}},$ and their intervals to be in the same progression with them, that is, the fringes and their intervals together to be in continual progression of the numbers $1, \sqrt{\frac{1}{2}}, \sqrt{\frac{1}{3}}, \sqrt{\frac{1}{4}}, \sqrt{\frac{1}{5}},$ or thereabouts. And these proportions held the same very nearly at all distances from the hair, the dark intervals of the fringes being as broad in proportion to the breadth of the fringes at their first appearance as afterwards, at great distances from the hair, though not so dark and distinct.

49. In Sir Isaac's observations we find a very remarkable and curious appearance, pretty similar to the one noticed by Dr. Hooke. The sun shining into his darkened chamber, through a hole three-fourths of an inch broad, he placed at the distance of two or three feet from the hole, a sheet of pasteboard, black on both sides; in the middle of it he made a hole about one-fourth of an inch square, for the light to pass through; behind the hole he fastened to the pasteboard the blade of a sharp knife, to intercept some part of the light which passed through the hole. The planes of the pasteboard and blade of the knife were parallel to one another, and perpendicular to the rays; and when they were so placed that none of the light fell on the pasteboard, but all of it passed through the hole to the knife, and there part of it fell upon the blade of the knife, and part of it passed by its edge, he let that part of the light which passed by fall on a white paper, two or three feet beyond the knife, and there saw two streams of faint light shoot out both ways from the beam of light into the shadow, like the tails of comets. But because the sun's direct light, by its brightness upon the paper, obscured these faint streams, so that he could scarce see them, he made a little hole in the midst of the paper for that light to pass through and fall on a black cloth behind it: and then he saw the two streams plainly. They were like one another, and pretty nearly equal in length, breadth, and quantity of light. Their light, at that end which was next to the sun's direct light, was pretty strong for the space of about one-fourth of an inch, or half an inch, and decreased gradually till it became insensible. The whole length of each of these streams, measured upon the paper, at three feet from the knife, was about six or eight inches; so that it subtended an angle, at the edge of the knife, of about 10° or 12° , or at most 14° . Yet sometimes he thought he saw it shoot 3° or 4° farther; but with a light so very faint that he could hardly perceive it. This light he suspected might, in part, arise from some other cause than the two streams; for, placing his eye in that light, beyond the end of that stream which was behind the knife, and looking towards the knife, he could see a line of light upon its edge; and that not only when his eye

was in the line of the streams, but also when it was out of that line, either towards the point of the knife or towards the handle. This line of light appeared contiguous to the edge of the knife, and was narrower than the light of the innermost fringe, and narrowest when his eye was farthest from the direct light; and therefore seemed to pass between the light of that fringe and the edge of the knife; and that which passed nearest the edge seemed to be most bent, though not all of it. He then placed another knife by the former, so that their edges might be parallel, and look towards one another, and that the beam of light might fall upon both the knives and some part of it pass between their edges. In this situation he observed that, when the distance of their edges was about the 400th part of an inch, the stream divided in the middle, and left a shadow between the two parts. This shadow was so black and dark that all the light which passed between the knives seemed to be bent and turned aside to the one hand or the other; and, as the knives still approached one another, the shadow grew broader, and the streams shorter next to it, till, upon the contact of the knives, all the light vanished.

50. From this experiment he concludes that the light which is least bent, and which goes to the inward ends of the streams, passes by the edges of the knives at the greatest distance; and this distance, when the shadow began to appear between the streams, was about the 800th part of an inch; and the light which passed by the edges of the knives, at distances still less and less, was more and more faint, and went to those parts of the streams which were farther from the direct light; because, when the knives approached one another till they touched, those parts of the streams vanished last which were farthest from the direct light. In the experiment of one knife only, the colored fringes did not appear; but, on account of the breadth of the hole in the window, became so broad as to run into one another, and, by joining, to make one continued light in the beginning of the streams; but in the last experiment, as the knives approached one another, a little before the shadow appeared between the two streams, the fringes began to appear on the inner ends of the streams, on either side of the direct light; three on one side, made by the edge of one knife, and three on the other side, made by the edge of the other knife. They were most distinct when the knives were placed at the greatest distance from the hole in the window, and became still more so by making the hole less; so that he could sometimes see a faint trace of a fourth fringe beyond the three above-mentioned: and, as the knives approached one another, the fringes grew more distinct and larger, till they vanished; the outermost vanishing first, and the innermost last. After they were all vanished, and the line of light which was in the middle between them was grown very broad, extending itself on both sides into the streams of light described before, the above-mentioned shadow began to appear in the middle of this light, and to divide it along the middle into two lines of light, and increased till all the light vanished. This enlargement of the fringes was so

great, that the rays which went to the innermost fringe seemed to be bent about twenty times more when the fringe was ready to vanish, than when one of the knives was taken away.

51. From both these experiments, compared together, Sir Isaac concludes that the light of the first fringe passed by the edge of the knife at a distance greater than the 800th part of an inch; that the light of the second passed by the edge of the knife at a greater distance than the light of the first fringe, and that of the third at a greater distance than that of the second; and that the light, of which the streams above-mentioned consisted, passed by the edges of the knives at less distances than that of any of the fringes.

52. He then got the edges of two knives ground truly straight, and attaching them to a board, so that their edges might look towards one another, and, meeting near their points, contain a rectilinear angle, he fastened their handles together, to make the angle invariable. The distance of the edges of the knives from one another, four inches from the angular point, where the edges of the knives met, was the eighth part of an inch; so that the angle contained by their edges was about $1^{\circ} 54'$. The knives being thus fixed together, he placed them in a beam of the sun's light let into his darkened chamber, through a hole the forty-second part of an inch wide, ten or thirteen feet from the hole; and he let the light which passed between their edges fall very obliquely on a smooth white ruler, half an inch or an inch from the knives; and there he saw the fringes made by the two edges of the knives run along the edges of the shadows of the knives, in lines parallel to those edges, without growing sensibly broader, till they met in angles equal to the angle contained by the edges of the knives; and where they met and joined they ended, without crossing one another. But if the ruler was held at a much greater distance from the knives, the fringes, where they were farther from the place of their meeting, were a little narrower, and they became something broader as they approached nearer to one another, and after they met they crossed one another, and then became much broader than before. From these observations he concluded that the distances at which the light composing the fringes passed by the knives were not increased or altered by the approach of the knives, but that the angles, in which the rays were there bent, were much increased by that approach; and that the knife which was nearest to any ray determined which way the ray should be bent, but that the other knife increased the bending.

53. When the rays fell very obliquely upon the ruler, at the distance of a third part of an inch from the knives, the dark line between the first and second fringe of the shadow of one knife, and the dark line between the first and second fringe of the shadow of the other knife, met one another, at the distance of the fifth part of an inch from the end of the light which passed between the knives, where their edges met one another; so that the distance of the edges of the knives, at the meeting of the dark lines, was the 160th part of an inch; and one half of that light passed by the edge of one knife, at a distance

not greater than the 320th part of an inch, and, falling upon the paper, made the fringes or the shadow of that knife; while the other half passed by the edge of the other knife, at a distance not greater than the 320th part of an inch, and, falling upon the paper, made the fringes of the shadow of the other knife. But, if the paper was held at a distance from the knives greater than the third part of an inch, the dark lines above-mentioned met at a greater distance than the fifth part of an inch from the end of the light which passed between the knives, at the meeting of their edges; so that the light which fell upon the paper where those dark lines met passed between the knives, where their edges were farther distant than the 160th part of an inch. For at another time, when the two knives were eight feet and five inches from the little hole in the window, the light which fell upon the paper where the above-mentioned dark lines met passed between the knives, where the distance between their edges was, as in the following table, at the distances from the paper there noted:—

| 54. Distances of the paper from the knives in inches. | Distances between the edges of the knives in millesimal parts of an inch. |
|---|---|
| 1 $\frac{1}{4}$ | 0012 |
| 3 $\frac{1}{4}$ | 0020 |
| 8 $\frac{1}{4}$ | 0034 |
| 32 | 0057 |
| 96 | 0081 |
| 131 | 0087 |

55. From these observations he concluded that the light which makes the fringes upon the paper is not the same light at all distances of the paper from the knives; but that, when the paper is held near the knives, the fringes are made by light which passes by the edges of the knives at a less distance, and is more bent than when the paper is held at a greater distance from the knives.

56. When the fringes of the shadows of the knives fell perpendicularly upon the paper, at a great distance from the knives, they were in the form of hyperbolas, their dimensions being as follows:—Let CA , CB , fig. 2, represent lines drawn upon the paper, parallel to the edges of the knives; and between which all the light would fall if it suffered no inflection. DE is a right line drawn through C , making the angles ACD , BCE , equal to one another, and terminating all the light which falls upon the paper, from the point where the edges of the knives meet. Then eis , fkt , and glv , will be three hyperbolic lines, representing the boundaries of the shadow of one of the knives, the dark line between the first and second fringes of that shadow, and the dark line between the second and third fringes of the same shadow. Also xip , ykg , and zlr , will be three other hyperbolic lines, representing the boundaries of the shadow of the other knife, the dark line between the first and second fringes of that shadow, and the dark line between the second and third fringes of the same shadow. These three hyperbolas are similar, and equal to the former three, and cross them in the points i , k , and l ; so that

the shadows of the knives are terminated, and distinguished from the first luminous fringes, by the lines eis and xip , till the meeting and crossing of the fringes; and then those lines cross the fringes in the form of dark lines terminating the first luminous fringes on the inside, and distinguishing them from another light, which begins to appear at i , and illuminates all the triangular space $ipDEs$, comprehended by these dark lines and the right line DE . Of these hyperbolas one asymptote is the line DE , and the other asymptotes are parallel to the lines CA and CB . The sun shining into his darkened room, through the small hole mentioned above, he placed at the hole a prism to refract the light, and to form on the opposite wall the colored image of the sun; and he found that the shadows of all bodies held in the colored light, between the prism and the wall, were bordered with fringes of the color of that light in which they were held; and, comparing the fringes made in the several colored lights, he found that those made in the red light were the largest, those made in the violet were the least, and those made in the green were of a middle bigness. For the fringes with which the shadow of a man's hair were bordered, being measured across the shadow, at six inches from the hair, the distance between the middle and most luminous part of the first or innermost fringe on one side of the shadow, and that of the like fringe on the other side of the shadow, was in the full red light $\frac{1}{4}$ of an inch, and in the full violet $\frac{1}{16}$. The like distance between the middle and most luminous parts of the second fringes, on either side of the shadow, was in the full red light $\frac{1}{8}$, and the violet $\frac{1}{32}$ of an inch; and these distances of the fringes held the same proportion at all distances from the hair without any sensible variation.

57. From these observations it was evident, that the rays which made the fringes in the red light, passed by the hair at a greater distance than those which made the like fringes in the violet; so that the hair, in causing these fringes, acted alike upon the red light or least refrangible rays at a greater distance, and upon the violet or most refrangible rays at a less distance; and thereby occasioned fringes of different sizes, without any change in the color of any sort of light. It may therefore be concluded, that when the hair in the first observation was held in the white beam of the sun's light, and cast a shadow which was bordered with three fringes of colored light, those colors arose not from any new modifications impressed upon the rays of light by the hair, but only from the various inflections whereby the several sorts of rays were separated from one another, which before separation, by the mixture of all their colors, composed the white beam of the sun's light; but, when separated, composed lights of the several colors which they are originally disposed to exhibit.

58. The first person who pursued any experiments similar to those of Newton on inflected light, was M. Maraldi; whose observations chiefly respect the inflection of light towards other bodies, whereby their shadows are partially illuminated; and many of the circumstances

which he noticed relating to it are well worthy of attention. He exposed in the light of the sun a cylinder of wood three feet long and six lines and a half in diameter; when its shadow, being received upon a paper held close to it, was every where equally black and well defined, and continued to be so to the distance of twenty-three inches from it. At a greater distance the shadow appeared to be of two different densities; for the two extremities of the shadow, in the direction of the length of the cylinder, were terminated by two dark strokes, a little more than a line in breadth. Within these dark lines there was a faint light, equally dispersed through the shadow, which formed a uniform penumbra, much lighter than the dark strokes at the extremity, or than the shadow received near the cylinder. As the cylinder was removed to a greater distance from the paper, the two black lines continued to be nearly of the same breadth, and the same degree of obscurity; but the penumbra in the middle grew lighter, and its breadth diminished, so that the two dark lines at the extremity of the shadow approached one another, till, at the distance of sixty inches, they coincided, and the penumbra in the middle entirely vanished. At a still greater distance a faint penumbra was visible; but it was ill defined, and grew broader as the cylinder was removed farther off, but was sensible at a very great distance. A narrow and faint penumbra was also seen on the outside of the dark shadow; and on the outside of this there was a tract more strongly illuminated than the rest of the paper. The breadth of the external penumbra increased with the distance of the shadow from the cylinder, and the breadth of the tract of light on the outside of it was also enlarged; but its splendor diminished with the distance.

59. He repeated these experiments with three other cylinders of different dimensions; and from them all he inferred, that every opaque cylindrical body, exposed to the light of the sun, makes a shadow which is black and dark to the distance of thirty-eight to forty-five diameters of the cylinder which forms it; and that, at a greater distance, the middle part begins to be illuminated in the manner described above. Other rays were deflected from the body, and formed a strong light on the outside of the shadow, and which might at the same time contribute to dilute the outer shadow, though he supposed that penumbra to be occasioned principally by that part of the paper not being enlightened, except by a part of the sun's disk only, according to the known principles of optics. The same experiments he made with globes of several diameters; but he found that, whereas the shadows of the cylinders did not disappear but at the distance of forty-one of their diameters, those of the globes were not visible beyond fifteen of their diameters; which he thought was owing to the light being inflected on every side of a globe, and consequently in such a quantity as to disperse the shadows sooner than in the case of the cylinders. In all these cases the penumbra occasioned by the inflected light began to be visible at a less distance from the body in the stronger light of the

sun than in a weaker, on account of the greater quantity of rays inflected in those circumstances.

60. M. Maraldi, being sensible that the above mentioned phenomena of the shadows were caused by inflected light, was induced to give more particular attention to this remarkable property, and to repeat the experiments of Grimaldi and Sir Isaac Newton in a darkened room. In doing this, he observed that, besides the enlarged shadow of a hair, a fine needle, &c., the bright gleam of light that bordered it, and the three colored rings next to this enlightened part, when the shadow was at a considerable distance from the hair, the dark central shadow was divided in the middle by a mixture of light; and that it was not of the same density, except when it was very near the hair. This new appearance is exactly similar to what he had observed with respect to the shadows in the open day-light above-mentioned.

61. Having placed a bristle in the rays of the sun, admitted into a dark chamber by a small hole, at the distance of nine feet from the hole it made a shadow, which, being received at five or six feet from the object, he observed to consist of several streaks of light and shade. The middle part was a faint penumbra, bordered by a darker shadow, and after that by a narrower penumbra; next to which was a light streak broader than the dark part, and next to the streak of light, the red, violet, and blue colors were seen as in the shadow of the hair. He also placed in the same rays, several needles of different sizes; but the appearances were so exceedingly various and singular, that he does not recite them. He exposed in the rays of the sun, admitted by a small hole into a dark chamber, a plate two inches long, and a little more than half a line broad. This plate being fixed perpendicularly to the rays, at the distance of nine feet from the hole, a faint light was seen uniformly dispersed over the shadow, when it was received perpendicularly to it, and very near. The shadow of the same plate, being received at the distance of two feet and a half, was divided into four very narrow black streaks, separated by small lighter intervals equal to them. The boundaries of this shadow on each side had a penumbra, which was terminated by a very strong light, next to which were the colored streaks of red, violet, and blue, as before.

62. The shadow of the same plate, at four feet and a half distance from it, was divided into two black streaks only, the two outermost having disappeared; but these two black streaks which remained were broader than before, and separated by a lighter shade, twice as broad as one of the former black streaks, when the shadow was taken at two feet and one-third. This penumbra in the middle had a tinge of red. After the two black streaks there appeared a pretty strong penumbra, terminated by the two streaks of light, which were now broad and splendid, after which followed the colored streaks. A second plate, two inches long and a line broad, being placed like the former fourteen feet from the hole by which the rays of the sun were admitted, its shadow, being received perpendi-

cularly very near the plate, was illuminated by a faint light, equally dispersed, as in the preceding plate. But being received at thirteen feet from the plate, six small black streaks began to be visible. At seventeen feet from the plate, the black streaks were broader, more distinct, and more separated from the streaks that were less dark. At forty-two feet from the plate, only two black streaks were seen in the middle of the penumbra. This middle penumbra between the two black streaks was tinged with red. Next to the black streaks there always appeared the streaks of light which were broad, and the colored streaks next to them. Receiving the shadow of the same plate at the distance of seventy-two feet, the appearances were the same as in the former situation, except that the two black streaks were broader, and the interval between them, occupied by the penumbra, was broader also, and tinged with a deeper red.

63. In the same rays of the sun he placed different plates, larger than the former, one of them a line and a half, another two lines, another three lines broad, &c., but receiving their shadows upon paper, he could not perceive in them those streaks of faint light which he had observed in the shadows of the small plates, though he received these shadows at the distance of fifty-six feet. Nothing was seen but a weak light, equally diffused as in the shadows of the two smallest plates, received very near them. The streaks of light in the shadows of needles of a middling size, our author ascribed to the rays of light which are inflected at different distances from the bodies; and he imagined that their crossing one another was sufficient to account for the variations observable in them at different distances. The extraordinary size of the shadows of these small substances M. Maraldi thought to be occasioned by the shadow from the enlightened part of the sky, added to that which was made by the light of the sun, and also to a vortex occasioned by the circulation of the inflected light behind the object.

64. M. Maraldi, having made the preceding experiments upon single long substances, had the curiosity to place two of them so as to cross one another in a beam of the sun's light. The shadows of two hairs placed in this manner, and received at some distance from them, appeared to be painted reciprocally one upon another, so that the obscure part of one of them was visible upon the obscure part of the other. The streaks of light also crossed one another, and the colored streaks did the same. Having placed a needle and a hair crossing one another, their shadows, at the same distance, exhibited the same appearances as the shadows of the two hairs, though the shadow of the needle was the stronger. He also placed in the rays of the sun a bristle and a plate of iron a line thick, so that they crossed one another obliquely; and when their shadows were received at the same distance, the light and dark streaks of the shadow of the bristle were visible so far as the shadow of the plate on the side of the acute angle, but not on the side of the obtuse angle, whether the bristle or the plate were placed next to the ray. The plate made a shadow sufficiently dark, divided

into six black streaks; and these were again divided by as many light ones equal to them; and yet all the streaks belonging to the shadow of the bristle were visible upon it.

65. M. Maraldi exposed several small globes in the light of the sun in his dark chamber, and compared their shadows with those of the long substances, as he had done in the day-light, and the appearances were still similar. There was much more light in the shadows of the globes than in those of the cylinders, not only when they were both of an equal diameter, but when that of the globe was larger than that of the cylinder, and the shadows of both the bodies were received at the same distance. He could perceive no difference of light in the shadows of the plates which were a little more than one line broad, though they were received at the distance of seventy-two feet; but he could easily see a difference of shades in those of the globes, taken at the same distance, though they were two lines and a quarter in diameter. To explain the colors at the edges of these shadows, he contrived to throw some of the shadows upon others; and the following observations, though they did not enable him to accomplish what he intended, are worth reciting:—Having thrown several of the similar colors upon one another, and thereby produced a tinge more lively than before, he threw the gleam of light, which always intervened between the colors and the darker part of the shadow, upon different parts of other shadows; and observed that, when it fell upon the exterior penumbra made by another needle, it produced a beautiful sky-blue color, almost like that which was produced by two blue colors thrown together. When the same gleam of light fell upon the deeper shadow, in the middle, it produced a red color. He placed two plates of iron, each three or four lines broad, very near one another, but with a very small interval between them; and having placed them in the rays of the sun, and received their shadows at fifteen or twenty feet from them, he saw no light between them but a continued shadow, in the middle of which were some streaks of a lively purple, parallel to one another, and separated by other black streaks; but between them there were other streaks, both of a very faint green, and also of a pale yellow.

66. If a solid opaque body, such as a hair, a slender wire, &c., be placed in the stream of light within the room, the size of the shadow of that body will be found different from what it ought to be if the rays of light were not bent in passing by it. This bending of the rays of light by passing, not through, but near the surface of a body, is called the inflection of light.

67. Let X, fig. 3, be the hole (about the fiftieth part of an inch) of the light's passage into a darkened room, and let XA, XB, be lines drawn from each external opposite edge on one side of the solar disc, to each external opposite edge on the contrary side of the hole, crossing one another: XCD will represent the beam of light after its passage through the hole, at all distances therefrom, considerably larger than the penumbral cone EAB.

68. At seven feet from the hole the breadth

of the beam was $\frac{1}{10}$ parts of an inch. If the light had not been bent, that breadth could not have exceeded $\frac{1}{10}$. Hence it must be concluded that the light, being attracted by the sides of the hole, is inflected, and of course caused to proceed more divergently than otherwise it would have done.

69. With a hole one-tenth of an inch wide, or wider, the centre of the beam was composed of the dense direct light of the sun unchanged in its passage; but farther therefrom, towards the borders of the beam, this light began to increase in density, and gradually decayed more and more in the approaches nearer and nearer to the borders, becoming at last considerably diluted and evanescent, and rendering the edge of the beam ill-defined and indistinct.

70. With a smaller hole than the last the central dense light entirely disappeared, and, with a hole yet smaller than this, the external edges of the beam became more condensed and better defined; and the whole beam of light became, as before described, of more uniform density in all its parts. With a hole smaller than any of the foregoing, about $\frac{1}{100}$ th part of an inch wide, various colors began to appear in the beam, the central parts of which became now, in their turn, more diluted than the rest, the external parts denser than these, and bordered with tinges of yellow and red light on the very edge or margin of the beam.

71. All these appearances are to be ascribed to the same attractions of the edges of the holes, and of the different parts of the edges. These, when the hole is large, affect only the parts of the light passing nearest to them; when the hole is reduced they attract and dilate the whole of the passing light; when the hole is yet more considerably diminished, they act, not only each part upon the light passing nearest to each, but each part also upon the light passing nearest to each opposite part of the edge, condensing by diminishing the attraction and diffusion of the light on the edges of the beam, and rendering the whole more equably and uniformly divergent, and these at last, when the hole is in its most reduced state, of about $\frac{1}{100}$ th part of an inch wide, by their various actions produce colors in the passing light.

72. In the beam of solar light passing through the small hole $\frac{1}{100}$ th part of an inch wide, the shadows of very slender bodies, such as pins, needles, straw, hairs, &c., were observed to be considerably broader, as they ought to be in this divergent light, than the bodies themselves; but, as each of these bodies exercises upon the light passing by it the same attractions by which the light is bent in passing through the hole, the author of these experiments concluded that a part of the light would be in every case bent, in passing by, towards the body into the shadow, and illuminate it and diminish its breadth.

73. Across a beam of solar light, admitted into a dark chamber through a small hole in a thin piece of lead, nearly $\frac{1}{100}$ th of an inch wide, a hair of a man's head was interposed, and the beam being received on a screen or sheet of white paper, with an obliquity convenient for the purpose, the following appearances were noted:

74. At the termination of the shadow, whose intensity or darkness was not considerable, the following orders and distinctions of colors appeared. First and nearest to the dark or blue parts of the shadow might be seen a diluted blue, changing into a breadth of white light, followed by breadths of yellow and red. To these succeeded an interval of diluted shade, then breadths of diluted violet, blue, diluted green, yellow, red; then green, diluted yellow, red; diluted green, red; white, diluted red, and finally, white light. These are the more general orders of the colors. Of these orders the three first were sufficiently obvious and distinct; the last evanescent and requiring accommodation of circumstances to produce, and attention to perceive them.

75. When the distance of observation from the hair was very small, and before the first bright streak of light began to appear, the shadow of the hair was distinct and well-defined, and of intense blackness. At a greater distance this shadow appeared to be divided by a parallel line of light throughout its whole length, into two parts, and resembled a double shadow, or the shadows of two hairs, but was by no means of the same degree of blackness as was the single shadow observed close to the hair. At still greater distances it increased in breadth and diminished in blackness, whilst the transverse dimensions of the dividing line of light increased at the same time, until, at a considerable distance from the hair, this intermediate band or line of light began to put on the appearance of colors on its edges, and to assume, on both sides externally, casts of yellowish and reddish light. By further increase of distance this apparent shadow, these dark intervals became more diluted, and of nearly the same color throughout, the line of light more and more diffused, and was at last extinguished by the extreme diffusion and ultimate invisibility of the light that produced it.

76. Whilst at all these different distances these changes proceed in the shadow, and in the light nearest to the body, in the other adjoining parts of the light passing next in order of distance by the hair considerable changes are also produced.

77. The shadow that first appeared close to the hair is perfectly and truly a shadow, being produced by the interception of the passing light by the hair.

78. This shadow, however, quickly ceases to appear, the rays of light nearest to it on both sides of the hair being bent into it at considerable angles of inflexion and dispersion, and crossing, illuminating, and extinguishing it.

79. The rays of light are not only bent, they are also distributed or divided into different rays of different colors, in angles of dispersion greater as the distances are less, and less as the distances are greater, in such a manner that of different colors at the same distance, the purples, blues, greens, yellows, and reds, are bent towards the body; the purples most, each of the others in due succession less, and the reds least, according to the order of their statement; and of colors of the same sorts, at different distances, the nearer more than the more remote, and the more remote less than the nearer. So various, however, are the bendings of different colors at different distances,

that in certain distinct portions of light, and at different distances of observation, the more remote and the nearer rays of different colors contained within each of those portions or divisions of the light, become variously intermingled with each other, and, by their various intermixtures, form each of these divisions into party-colored fringes; whilst, the rays of different divisions never mixing with those of others, the intervals of the divisions are preserved, and become the dark intervals which separate the fringes.

80. The discoveries of M. A. Fresnel respecting the inflexion of light are in the highest degree important, and cannot fail to be regarded as affording a strong confirmation of the Huygenian theory of light. The following is a summary of the principal results:—

81. (1.) M. Fresnel found that the fringes formed by inflexion may be examined by an eye-glass, without receiving them upon a white surface; and, by adapting a micrometer to the eye-glass, he was able to determine their breadths, even to the 100th or 200th part of a millimetre.

82. (2.) By following the external fringes to their origin by means of a lens with a short focus, he perceived the third fringe at the distance of less than the 100th of a millimetre from the edge of the inflecting body.

83. (3.) The inflexion of the passing light is influenced by the distance of the radiating or luminous point from the inflecting body, as appears from the following results:—

| Distance of the radiating point from the body. | Distance behind the body where the inflexion was measured. | Angular deviation or inflexion of the red rays of the first fringe. |
|--|--|---|
| 100 millimetres. | 1 metre. | 12' 6" |
| 6 metres. | 1 metre. | 3' 55" |

84. Hence it follows that the ray suffers a less degree of inflexion in proportion to the distance from which it diverges.

85. (4.) When the inflexion of the same fringe is measured at different distances behind the inflecting body, the distance of the radiant point remaining the same, it is found to be different at different distances; and hence it follows that the successive positions of the same fringe are not in a straight line, but form a curve whose concavity is turned towards the inflecting body. The lines which join the different positions of the fringe of all the orders of colors are hyperbolas, having for their common foci the radiating point and the edge of the inflecting body. In some of M. Fresnel's experiments the sagitta of curvature was about one millimetre, or the twenty-fifth part of an inch, which is nearly fifty times greater than the error of observation.

86. (5.) M. Fresnel measured the fringes produced by various bodies, and found, by accurate measurement, that they all produced the same inflexion, the back of a razor giving the same fringes as its sharp edge.

87. Results of a similar kind were obtained by Dr. Brewster in two sets of experiments, one

of which was made in 1798, and the other in 1812 and 1813. He compared the fringes formed by gold leaf with those made by masses of gold; those formed by films which produced the colors of thin plates with those formed by masses of the same substance. He examined the effects of platinum, diamond, and cork, in inflecting the light; the effects of grooves in metallic surfaces, &c.; and of cylinders of glass immersed in fluids of the same refractive power: and from these he concluded that the Newtonian theory of inflexion could not be true; that the inflexion was not produced by any force inherent in the bodies themselves, but arose from a property of the light itself, which always shows itself when divergent light was stopped in its progress.

88. (6.) The fringes in the interior of the shadow were first explained by Dr. Thomas Young. He showed, in the clearest manner, that they were formed by the interference of two portions of light coming from the opposite sides of the inflecting body. Having introduced the sun's light into a dark room, through two small holes very near each other, he received the admitted light upon a sheet of paper from each of the holes separately, and observed no particular effect. But when the light was admitted through both the holes at the same time, so as to interfere, a series of obscure and brilliant fringes was produced.

89. M. Fresnel obtained a similar effect by reflecting light from two metallic mirrors slightly inclined to each other, and whose surfaces were nearly in the same plane. The formation of these bands depends on the lengths of the paths of two interfering portions of light. When the paths are exactly of the same length, the two portions of light will form a very brilliant fringe, having an intensity greater than that of either portion. If the next brilliant fringe corresponds to a difference of paths equal to d , then other brilliant fringes will be formed when the differences of the paths are $2d$, $3d$, $4d$, &c. When the differences of the paths are $\frac{1}{2}d$; $d + \frac{1}{2}d$; $2d + \frac{1}{2}d$, or $\frac{3}{2}d$, $\frac{5}{2}d$, $\frac{7}{2}d$, the interfering portions neutralise or destroy one another, and consequently produce a black fringe. The quantity d has a different value for the rays of different colors, and varies as the length of the fits in Newton's theory. M. Fresnel has found d to be $\frac{1}{10000}$ th of a millimetre for red light.

90. This beautiful theory of Dr. Young is embraced by M. Fresnel. Both these philosophers had ascribed the exterior fringes to the interference of the direct rays with rays reflected from the margin of the inflecting body. M. Fresnel, however, has since found that this explanation is insufficient; for the real place of the fringe is sometimes $\frac{1}{1000}$ th of a millimetre different from what it should be upon this supposition; and at any rate, if the hypothesis were true, the extent and curvature of the margin of the inflecting body would have an influence upon the intensity of the fringes, which is contrary to experiment. He is therefore obliged to admit that the rays which pass at a sensible distance from the inflecting body are made to deviate from their primitive direction, and cohere also in the production of the colored fringes.

91. It is by no means easy to explain to general readers the hypothesis by which M. Fresnel has accounted for the fringes upon the principle of interference; but we shall attempt to make it as intelligible as possible.

92. Let A M E, fig. 4, be a luminous wave or undulation, propagated from the radiant point C, and partly intercepted by the inflecting body A G. Then, if we suppose it divided into an infinity of small arcs A m, m' m, M n, n' n', n'' n'', &c., M. Fresnel obtains the intensity of any point (P) of the wave A M E, when it has reached the position B P D, by supposing elementary waves to be propagated from every point m, m', M, n, n', &c., of its preceding position at A M E. These elementary waves are propagated in all directions, and with intensities sensibly equal when they do not deviate much from the perpendicular. M. Fresnel does not take into account the waves which are most inclined, and which, according to his hypothesis, destroy one another; and in this way he determines the intensity of the light resulting from the reciprocal influence of all the rays which are slightly inclined to the perpendicular. By thus combining the principle of Huygens with Dr. Young's law of interference, he has obtained a formula which represents the observations with surprising accuracy.

93. (7) The phenomena of inflexion are considered by M. Fresnel to be inexplicable on the Newtonian theory of the emission of luminous particles; while almost all of them may be directly deduced from the Huygenian Theory of Undulations.

94. There are two very important and comparatively new branches of optical science to which we must now direct our readers' attention, namely, the *double refraction* and *polarisation* of light.

95. About the middle of the seventeenth century Dr. Erasmus Bartholinus, a physician at Copenhagen, and the author of several excellent works on geometry, procured, from some of the Danish merchants that frequented Iceland, a crystal stone like a rhombick or rhomboid prism, which, when broken into small pieces, kept the same figure. It was dug out of a very high mountain, not far from the Bay of Roerfiord, in 65° of lat. Its whole body was rather clear than bright, and of the color of limpid water; but that color, when it was immersed in water and dried again, became dull. With this substance, which from its locality was called Iceland crystal, Bartholinus made a number of experiments both chemical and optical; and, having discovered some of the singular effects which it produced upon light, he published an account of them at Copenhagen in 1669, under the title of *Experimenta Crystalli Islandici Dis-diaclastici, quibus mira et insolita refractio detegitur*. There does not appear to be a copy of this work in this country, but the want of it is well supplied by an account of sundry experiments made and communicated by Dr. Erasmus Bartholinus, addressed to Dr. Oldenburgh, and printed in the sixty-seventh number of the Philosophical Transactions. From this account we shall select those parts which relate to double

refraction, and shall in general give them in the words of the author.

96. (1.) 'The objects seen through this crystalline prism appear sometimes, and in certain positions of the prism, double; where it is to be noted, that the distance between the two images is greater or less, according to the different bigness of the prism; insomuch that in thinner pieces this difference of the double image almost vanisheth.

97. (2.) 'The object appearing double, both images appear with a fainter color; and sometimes one part of the same species is obscurer than the other.

98. (3.) 'To an attentive eye one of these images will appear higher than the other.

99. (4.) 'In a certain position the image of an object seen through this body appears but single, like as through any other transparent body.

100. (5.) 'We have also found a position wherein the object appears six-fold.

101. (6.) 'If any of the obtuse angles of this prism be divided into two equal parts by a line, and the visual rays do pass from the eye to the object through that line or its parallel, both images will meet in that line, or in another parallel to it.

102. (7.) 'Whereas objects seen through diaphanous bodies are wont to remain constantly in the same place, in what manner soever the transparent body be moved, nor the image on the surface move, except the body be moved; we have observed here that one of the images is moveable, the other remaining fixed; although there be a way also to make the fixed image moveable, and the moveable fixed in the same crystal, and another to make both moveable.

103. (8.) 'The moveable image doth not move at random, but always about the fixed, which while it turneth about, it never describeth a perfect circle but in one case.

104. (9.) 'Dioptrics teach, that a diaphanous body having one only surface, sends from one object but one image refracted to the eye, and, having more surfaces than one, it represents one image in each. But, whereas in our substance there occurs but one plain superficies to the eye, and yet a double image of one object, it concerned us to consider whence this double image might be caused. Two ways offered themselves to us, reflection and refraction. How reflection could perform it, was difficult to find. For, having dulled the clearness of the two plain sides of our crystalline prism, thereby to make them unfit for reflecting the light, the rays being directed through its upper and lowermost superficies, the image still appeared double. Again, two species appearing through a great prism, upon breaking of the same into pieces, and so reducing it into divers smaller ones, it came to pass, that through each of these less portions the same object was seen always double. Whence I collected, that if it should be said that one of the images proceeded from the reflection of the plain sides, the former of these experiments would discountenance that assertion. But then if another should derive the cause from some internal reflection of the surfaces of this

body, certainly the same effect would not have been found in every one of its parts; but the double appearance that was exhibited in the smallest portion would have been multiplied in a greater bulk.

105. 'Reflection, therefore, not satisfying, we recurred to refraction. But whereas it is known that no image can pass through two diaphanous bodies of a different nature but by refraction, and that one image supposeth one refraction, it did follow that, if refraction were made the cause of this phenomenon, there would be a double refraction for a double image. And forasmuch as the appearances of our Iceland crystal are not of the same kind, but one of them is fixed, the other moveth, we shall distinguish the refractions themselves which refract the double rays arriving to the eye, and call the one which sends the fixed image refracted to our sight, usual; the other, which transmits the moveable to the eye, unusual. And hence, namely, from this peculiar and notable property of the double refraction in this Iceland-stone, we have not scrupled to call it *disdiaclastic*.

106. 'This being supposed, it will not be irrational to suspect that these two refractions proceed from different principles. For, since it is commonly known from dioptrics that an object, by visual rays affecting the eye, exhibits some image on the superficies of the diaphanous bodies, which image is but one as long as the superficies is one, and the upper plain parallel to the lower; as also, that if, the eye remaining steady, the diaphanous body be moved, that image remains always fixed, as long as the object whence it comes remains unmoved; therefore, in this transparent substance, the image which appears fixed may proceed according to the ordinary laws of usual refraction; but that which moveth, and is carried about according to the motion of the diaphanous body, while the object remains unstirred, sheweth an unusual kind of refraction, hitherto unobserved by dioptricians.

107. 'Hence, that I might examine the nature and difference of both, I put upon some object, as the point A, fig. 5, the prism of my double refracting crystal N P R Q T B S, and, the eye M being perpendicularly posited over the upper plain of the prism N P R Q, I noted whether there was any refraction of the point A, for the usual laws of refraction teach that there is none. But the perpendicular ray of the eye was observed to pass not through the moveable but the fixed image, thereby being conformable to the rules of usual refraction, as striking the eye unrefracted, so that the eye, the image, and the object, were seen in the same line. But when in the same site of the eye, the object A did also exhibit the other image X, at no small distance from the former, I took notice that this object A was not seen unrefracted by the means of the image X, though the eye M remained perpendicular over the plain; and that, consequently, this unusual refraction is not subject to the received axiom of dioptrics, which imports that a ray, falling perpendicularly on the superficies of a diaphanous body, is not refracted, but passeth unrefracted.

108. 'Next I so placed the eye in O that the

ray from the object A arriving to the eye, might be parallel to the lines RT and QB of the plane RQT B, &c.; then it appeared that the rays were trajected from the object A without refraction, through the moveable image Q; the object A, the moveable image Z, and the eye O, being in the same line; and that the same object A did transmit to the eye O, remaining in the same position, yet another species Y, through the refracted ray AYO. Whence it was manifest to me that this unusual refraction had for its rule the parallel of the sides of this double refracting crystal, while the usual refraction was directed according to the perpendicular of the superficies.

109. 'But considering that the place of the point appearing through our diaphanous body cannot easily be determined, as being only obvious in the uppermost part, we shall add the way whereby we have found its diversity, by drawing on the subjacent table a straight line through that point; the place of which line will be determined by the one eye through this crystal, and by the other eye without the crystal. For, in the same figure, let through the object A be drawn upon the table a straight line BC. The eye being in M, that double line HD and IE will appear, the species being cast on the upper surface; and, if you will attend well, you will observe one of the images, viz. the fixed HD, to be congruent to the adjacent line BC, whilst the other, namely, the moveable EI, tendeth towards R. But if afterwards the eye be posited in O, the same object, I mean the line BC, will not only be represented double by the images KF and LG, but also the moveable image GL be congruent to the inferior line BC, while the fixed FK is not so, but tends towards N.'

110. After describing these experiments, Bartholinus proceeds to measure the ratio of the angles of incidence and refraction in the ordinary image, and he finds it to be as five to three, which makes the index of refraction 1.667. He endeavours to account for the double refraction, by supposing that the Iceland crystal has two sets of pores; one, according to the ductus or direction of the sides, and parallel thereto; since it may be observed that, 'according to this disposition of the sides, it is broken, and the parts severed from one another, and that one of the images, namely the moveable, passeth through them. Next, besides these pores lying according to the parallelism of the sides, it has others, such as glass, water, and right crystals have, through which the right image is transmitted.'

111. Bartholinus next supposes that there are some directions in which the rays pass through the crystal unrefracted; and though, in ordinary diaphanous bodies, these directions are perpendicular to their surfaces, yet in other bodies they may have another position. He likewise supposes that half of the incident pencil is refracted usually, and the other half unusually; or, what is the same thing, that the usual and unusual refractions have the same power to refract the incident light.

112. From this account of Bartholinus's experiments, he appears to have discovered three important facts.

113. (1.) That Iceland spar has the property of double refraction.

114. (2.) That one of these refractions is performed according to a law which is common to all transparent solids and fluids, while the other is performed according to an extraordinary law which had not previously been observed by philosophers; and,

115. (3.) That the incident light is equally divided between the ordinary and extraordinary pencils.

116. Bartholinus does not seem to have transmitted the ordinary and extraordinary pencils through a second piece of Iceland spar, and it was therefore reserved for the celebrated Huygens to discover, by means of this experiment, the remarkable properties which arise from the polarisation of these two pencils.

117. A few years after the publication of Bartholinus's work on Iceland crystal, the attention of Huygens was directed to the subject of double refraction. He was induced to begin this investigation principally with the view of obviating any objection that might be drawn from the facts discovered by Bartholinus, against his own theory of ordinary refraction; and he was led to the particular views which he has published from a desire to assimilate the two classes of phenomena.

118. His researches on the subject from the fifth chapter of his *Traité de la Lumière*, which is entitled *De l'Estrange Refraction du Cristal d'Islande*. This work was composed about the year 1678, and read to several of the learned individuals who then composed the Academy of Sciences; but it was not published till the year 1690, when its author was resident in Holland.

119. After a few preliminary observations, in which he gives Bartholinus the credit of having discovered some of the principal phenomena, he supposes AB EF, fig. 6, to be a piece of Iceland crystal, and conceiving one of the three obtuse angles, which form the solid angle C, namely, ACB, to be bisected by CG, he calls the plane CGHF, which passes through this line, and the side CF, the principal section of the crystal.

120. If the surface AB is now exposed to the sun, being all covered but a small aperture K in CG, and if a ray IK is incident perpendicularly at K, it will be divided at the point K into two rays, one of which, KL, will be a continuation of IK; while the other, KM, will deviate from KL towards C, by an angle of $6^{\circ} 40'$, but will still be in the plane CGHF. This ray will emerge at M in the direction MZ parallel to IK. Hence, since the point M, by the extraordinary refraction, is seen by the refracted ray MKI, the eye being at I, any point or aperture at I, by the same refraction, will be seen by the refracted ray LKI, LK being parallel to MK, if I is very distant. The point L will consequently be seen in the direction IRS, and, as the same point is seen by the ordinary refraction in the direction IK, it will necessarily appear double.

121. If the ray now falls in the direction NO, in the plane CGHF, making an angle of $73^{\circ} 20'$ with CG, or nearly parallel to CF, which makes with FH an angle of $70^{\circ} 57'$, it will be divided at O into two rays, one of which will be

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Fig. 1.

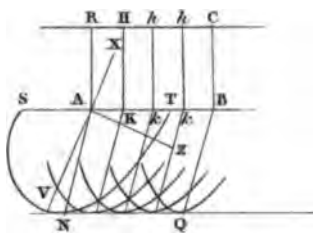


Fig. 2.

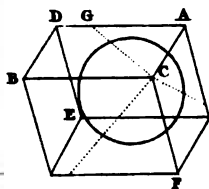


Fig. 3.

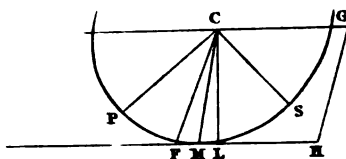


Fig. 4.

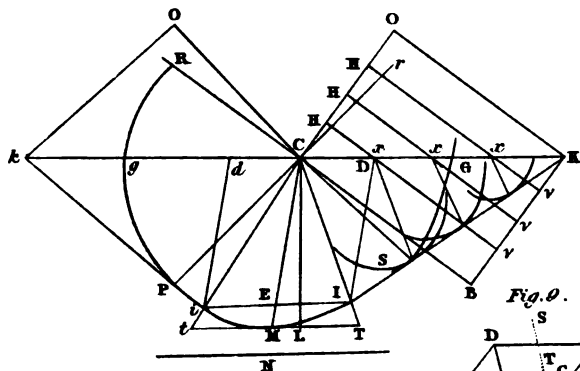


Fig. 8.

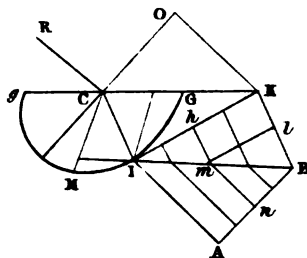


Fig. 8.

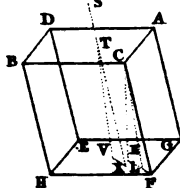


Fig. 1.

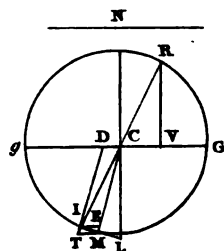


Fig. 5.

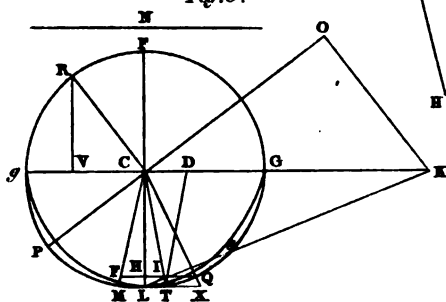


Fig. 10.

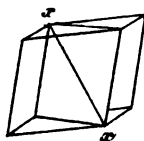


Fig 12.

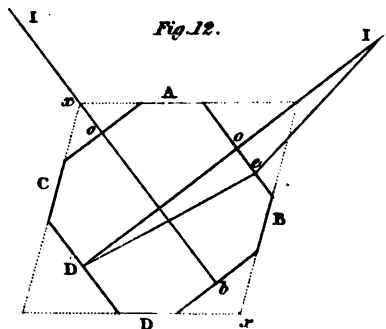


Fig. 11.

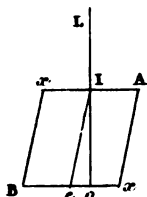
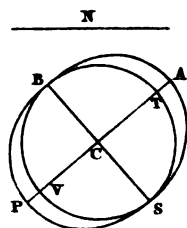


Fig. 6.



a continuation of NO , without refraction, while the other will be refracted in the direction OQ , both rays being in the plane $CGHF$. This is true of all planes parallel to the principal section.

122. In order to determine the law of the two refractions, Huygens drew upon a smooth surface a black line, AB , fig. 7, and two lines CED , KML , perpendicular to it, and having their distance EM greater or less, according to the obliquity at which the refraction is to be examined. The crystal being placed upon E , so that AB is in, or parallel to, the principal section EG , place the eye above it, and the line AB will be seen single, but CD will be double. The ordinary image will be easily distinguished from the extraordinary image, from the latter being always more elevated, or from the former remaining fixed in turning the crystal, while the latter revolves round the ordinary image.

123. If the eye is now placed at I , perpendicular to AB , till it sees the ordinary image of CD coinciding with the part of CD without the crystal, let the point H be marked on the crystal where the intersection at E appears. Let the eye be now taken towards O , in the same perpendicular plane, till the ordinary image of CD coincides with KL , and let the point N , where the intersection E now appears, be marked upon the crystal. The lines NH , EM , and HE , the thickness of the crystal, being accurately measured, then, joining NE and NM , the ratio of refraction will be that of EN to NP , because these lines are as the sines of the angles of incidence and refraction NPH , NEP . In this way Huygens found the ratio to be that of five to three at all incidences, as Bartholinus had previously determined.

124. In order to find the extraordinary refraction, he next withdrew his eye to Q , till the extraordinary image of CD coincided with KL ; he marked the point R , and consequently obtained by measurement the ratio of ER to ES , or the ratio of the sine of incidence to that of refraction. By numerous observations he found that this ratio was not constant, but changed with the inclination of the incident ray.

125. In continuing his observations on the extraordinary refraction, Huygens found that it observed the following law:—Let $CGHF$, fig. 8, be the principal section; and SK , VK , two incident rays equally inclined to the perpendicular IL ; and KT , KX , the extraordinary rays after refraction; the distances TM and XM of these rays from the point M , where the refraction of the perpendicular ray IK cuts the base by F , will always be equal. This law is also true in the refraction of the other sections.

126. Having succeeded in explaining, in a very satisfactory manner, the refraction of ordinary transparent bodies, by means of spherical emanations of light, Huygens was naturally led to suppose that, as Iceland spar had two different refractions, it must also have two different emanations of waves of light, one of which might be propagated in a spherical form in the ethereal matter spread through the crystal. He conceives that this ethereal matter exists in greater quantity than the solid particles, and is alone capable of

producing transparency. From these spherical undulations, which are propagated more slowly within the crystal than without it, proceed the phenomena of the ordinary refraction. The other set of undulations, to which the irregular refraction is owing, he conceives to be elliptical or rather spheroidal, and to be propagated indifferently both through the ethereal matter and through the solid particles. Huygens considers that the regular arrangement of the particles may contribute to the formation of the spheroidal waves, as nothing more is required for this than that the light be propagated more quickly in one direction than another; and he was convinced that such an arrangement actually exists in Iceland spar.

127. In proceeding to explain his theory, Huygens supposes AB , fig. 1, plate II., to be the surface of Iceland spar, exposed to a beam of light; and as a perpendicular ray incident upon this surface from a distant luminous is, by the theory of undulation, no more than the incidence of a parcel of waves parallel to AB , he considers the line BC , parallel and equal to AB , to be a portion of the wave of light, of which the points R , H , A , C , meet AB at A , K , k , B . Instead of hemispherical waves, as in ordinary refractions, he supposes the waves to be now hemispheroids, whose major semi-axes are oblique to the plane AB . Hence SVI will represent an individual wave coming from the point A , after RC has arrived at AB . Now, as all the other points K , k , B , will propagate waves similar to SVI , in the same space of time that the point A did, the common tangent NQ of all these semi-ellipses will be the propagation of the wave RC in the transparent body, according to the above theory:

128. But the tangent NQ , which is equal and parallel to AB , is not directly opposite to A , B , but comprehended between AN and BQ , conjugate diameters to those which are in the line AB . 'In this way,' says Huygens, 'I have been able to conceive what appeared very difficult, how a perpendicular ray could suffer refraction in a transparent body,' the wave RC , instead of going straight on when it entered the surface AC , extending itself between the parallels AB and NQ .

129. In order to determine the form and situation of the spheroids in Iceland crystal, Huygens considered that all the six faces produced the same refraction, which were equally related to the principal sections shown in fig. 2, by dotted lines drawn from C . Hence he concluded that the spheroid which had the same relation to these three sections must have its axis coincident with the axis of the solid angle C , and therefore that the short diagonal of the rhomb determined the position of the axes of all the spheroidal waves, propagated from any point, taken either within or at the surface of the crystal, since all the spheroids ought to be similar, and have their axes parallel.

130. In the section GCF the angle C is $109^\circ 3'$, and the angle F $70^\circ 57'$; and if we conceive a spheroidal wave round the centre C , its axis will be in the same plane. Let CS , fig. 3, be the half of this axis, then the angle GCS

will be found to be $45^\circ 20'$. In determining the form of the spheroid, or the ratio of the semi-diameters CS , CP , which are perpendicular to each other, Huygens considers that the point M , where FH , parallel to CG , touches the ellipse, must be so situated that CM makes an angle of $6^\circ 40'$ with the perpendicular CL , being the deviation of the extraordinary ray. Hence we shall have,

$$\begin{aligned} CM &= 100000 \\ CP &= 105032 \\ CS &= 93410 \\ CG &= 98779 \end{aligned}$$

and the ratio of CP to CS that of 9 to 8; the spheroid is therefore produced by the revolution of an ellipse round its smaller diameter.

131. In order to determine the refraction of oblique rays, Huygens saw that they depended on the proportion between the velocity without and within the crystal; and he supposes this proportion to be such that while the light in the crystal describes the spheroid GSP , fig. 4, it describes without it a sphere whose semi-diameter is equal to the line N , which will be afterwards determined. Now, if RC is a ray incident at the surface CK , draw CO perpendicular to RC , and from O draw OK equal to N , and at right angles to CO . Having then drawn KI , touching the ellipse GSP , the line IC will be the refracted ray required. For the refraction of RC is nothing else than the progress of the point C of the curve CO , continued in the crystal; but the points HH of this wave, during the time that O comes to K , will arrive at the surface CK by the lines Hx , &c., and will also have produced in the crystal particular hemispheroidal waves from the centres x , &c., similarly situated with the hemispheroid $GSPg$; and whose great and small diameters will have the same ratio to the lines xv (which are continuations of Hx to KB parallel to CO) as the diameters of the spheroid GSP have to the line CB or N . The common tangent, therefore, of all the spheroids, which are here represented by ellipses, will be the line IK , which will be the propagation of the wave CO ; and the point I that of C .

132. In order to find the point of contact, I , we must find a third proportional CD to the lines CK , CG ; and having drawn DI parallel to CM , the diameter conjugate to CG , and previously determined, we have only to draw HI , which will touch the ellipse at I .

133. In like manner we may find the refracted ray Ci of any other ray rC , incident on the opposite side, by drawing Co perpendicular to Cr and following the rest of the preceding construction.

134. Hence we see that, if Cr and CR are incident at equal angles, we shall have $Cd = CD$, since $Ck = CK$ and $Cg = CG$. Consequently Ii will be bisected in E by CM , to which DI , Di , are parallel; and, because CM is the conjugate diameter to CG , it follows that Ii will be parallel to gG . If we then prolong the refracted rays, CI , Ci , till they meet the tangent ML in T and t , the distances MT , Mt , will also be equal.

135. Huygens next found, by measuring the

irregular refraction, that the ratio of N to CG was that of 156962 to 98779, or of 8 to 5 $\frac{1}{2}$, and he proceeds to explain an abridged method of finding the irregular refraction.

136. Let gG , fig. 5, be the surface of the crystal, GPG the ellipse, and CM the refraction of the perpendicular ray FC which deviates $6^\circ 40'$, and let RC be any other ray, whose refraction is required.

137. From the centre C , and with the semi-diameter CG , describe the circumference gRG , cutting the ray RC in R , and let fall RV perpendicular to CG . Then, since CD is known from the analogy, $N : CG = CV : CD$; draw DI parallel to CM , cutting the ellipse gMG in I , and joining C and I , CI will be the refracted ray required. For let CO be perpendicular to CR , and OK drawn equal to N , and perpendicular to CO ; then, if KI touches the ellipse in I , CI must be the refraction of RC . Since RCO is a right angle, the right-angled triangles RCV , KCO , are similar. Hence $CK : KO = RC : CV$; but $KO = N$, and $RC = CG$;

Whence $CK : N = CG : CV$; but by construction,

$$N : CG = CV : CD; \text{ therefore,}$$

$$CK : CG = CG : CD;$$

and, because DI is parallel to CM , the diameter conjugate to CD , it follows that KI touches the ellipse in I .

138. It appears, therefore, that, as there is in ordinary refractions, a constant ratio between the sines of incidence and refraction, so in the present case there is such a proportion between CV and CD or IE , that is between the sine of the angle of incidence, and the line intercepted between the refracted ray and the diameter CM ; for the ratio of CV to CD is always the same as that of N to the semi-diameter CG .

139. In comparing the regular and irregular refraction, Huygens observes, that if $APBS$, fig. 6, is the spheroid by which the light propagates itself in the crystal in a certain space of time, and produces the irregular refraction, then the inscribed sphere $BVST$ is the propagation, in the same space of time, of the light which serves for the regular refraction. For, since N is the radius of a spherical wave of light in the air, while in the crystal it is propagated by the spheroid $APBS$, the ratio of N to CS is that of 156962 to 93410. But the ratio of the regular refraction is that of 5 to 3, that is, N being the radius of a spherical wave of light in air, its propagation in the crystal forms in the same time a sphere whose radius is to N as 3 to 5. But 156962 is to 93410 as 51.3 minus $\frac{1}{4}$.

140. Though there are two different propagations of light within the crystal, yet it is only in the direction of the perpendiculars to the axis BS of the spheroid, that one of these propagations is more rapid than the other, for they have the same velocity in another direction, namely, in that of lines parallel to the same axis BS , which is also the axis of the obtuse angle of the crystal.

141. The ratios of the refractions being such as have now been determined, it follows that a ray of light, RC fig. 7, incident at an angle of

$73^{\circ} 30'$ with CG , should have its refraction CI in the same straight line with RC , or should pass through the crystal without refraction. For since $CG = CR = 98779$; $CM = 100000$ and $RCV = 73^{\circ} 20'$, CV will be 28330. But, because CI is the refraction of RC , $CV : CD = 156962 : 98779 = N : CG$, and $CD = 17828$. And since $CG^2 = CM^2 = GD \times Dg$: DP we have $DI : CE = 98353$. But as $CE : EI = CM : MT$; $MT = 18127$, which being added to $ML = 11609$ (the sine of $LCM = 6^{\circ} - 40'$) we have $LT = 27936$, which is to $LC = 99324$ as CV is to VR , that is as 29938, the cotangent of RCV , is to the radius. Whence it appears that $RCIT$ is a straight line.

142. Huygens goes on to show that the ray CI , emerging at the opposite surface of the crystal, ought to pass straight on without refraction, by demonstrating in general, that the reciproca-tion of refractions takes place in this crystal as well as with transparent bodies; that is, if a ray RC , fig. 8, incident on the surface of the crystal CG , is refracted in CI , the ray CI , emerging at the opposite and parallel surface IB of the crystal, will have its refraction IA , parallel to the ray RC .

143. Let CO , perpendicular to CR , represent, as formerly, a portion of a wave, whose continuation in the crystal is IK , so that the point C is continued by CI during the time that O arrives in K . If we now take a second space of time equal to the first, the point K of the wave IK will, in this second portion of time, have moved through the right line KB , equal and parallel to CI , because every point of the wave CO , in arriving at the surface CK , ought to continue in the crystal the same as the point C , and in the same time it will propagate from the point I in the air a spherical wave having a semi-diameter $IA = KO$, since KO is described in the same time. If we consider any other point k of the wave IK , it will advance by Am parallel to CI , and reach the surface IB , while the point K describes $Kl = Am$, and during the time that K has completed the remainder, lB , there will have been propagated from the point m a spherical wave, whose semi-diameter mn will have the same ratio to lB as $IA : KB$. The waves mn and IA will therefore have the same tangent AB , and the same is true of all the other spherical waves that are propagated out of the crystal by the impulsion of all the points of the wave IK against the surface of the other IB . The tangent BA will therefore be the continuation of the wave IK out of the crystal, when the point K has come to B ; and consequently IA , which is the perpendicular to BA , will be the refraction of the ray CI in going out of the crystal. But IA is parallel to RC since $IB = CK$, and $IA = KO$ and A and O right angles.

144. The only observations which Sir Isaac Newton appears to have published, on the subject of double refraction and polarisation, are contained in the queries printed at the end of the Third Book of his Optics. As they are written with great perspicuity, and easily understood, we shall lay them before our readers in his own words.

145. 'Query 25. Are there not other original

properties of the rays of light, besides those already described? An instance of another original property we have in the refraction of Iceland crystal, described first by Erasmus Bartholine, and afterwards more exactly by Huygenius, in his book *De la Lumiere*. This crystal is a pellucid fossile stone, clear as water or crystal of the rock, and without color; enduring a red heat without losing its transparency, and in a very strong heat calcining without fusion. Steeped a day or two in water it loses its natural polish. Being rubbed on cloth it attracts pieces of straws and other light things, like amber or glass; and with aquafortis it makes an ebullition. It seems to be a sort of talc, and is found in form of an oblique parallelopped, with six parallelogram sides and eight solid angles. The obtuse angles of the parallelograms are each of them $101^{\circ} 52'$; the acute ones $78^{\circ} 8'$. Two of the solid angles opposite to one another, as C and E , fig. 9, are compassed each of them with three of these obtuse angles, and each of the other six with one obtuse and two acute ones. It cleaves easily in planes parallel to any of its sides; and not in any other planes. It cleaves with a glossy polished surface not perfectly plane, but with some little unevenness. It is easily scratched, and by means of its softness it takes a polish very difficultly. It polishes better upon polished looking glass than upon metal, and perhaps better upon pitch, leather, or parchment. Afterwards it must be rubbed with a little oil or white of an egg, to fill up its scratches; whereby it will become very transparent and polished. But for several experiments it is not necessary to polish it. If a piece of this crystalline stone be laid upon a book, every letter of the book seen through it will appear double, by means of a double refraction. And if any beam of light falls either perpendicularly, or in any oblique handle upon any surface of this crystal, it becomes divided into two beams, by means of the same double refraction. Which beams are of the same color with the incident beam of light, and seem equal to one another in the quantity of their light, or very nearly equal. One of these refractions is performed by the usual rule of optics, the sine of incidence out of air into this crystal, being, to the sine of refraction as five to three. The other refraction, which may be called the unusual refraction, is performed by the following rule.

146. 'Let $ADBC$ represent the refracting surface of the crystal, C the biggest solid angle at that surface, $GEHF$ the opposite surface, and CK a perpendicular on that surface. This perpendicular makes, with the edge of the crystal CF , an angle of $19^{\circ} 3'$. Join KF , and in it take KL , so that the angle KCL be $6^{\circ} 40'$, and the angle LCF $12^{\circ} 23'$. And, if ST represent any beam of light incident at T in any angle upon the refracting surface $ADBC$, let TV be the refracted beam determined by the given proportion of the sines five to three, according to the usual rule of optics, Draw VX parallel and equal to KL . Draw it the same way from V in which L lieth from K ; and, joining TX , this line TX shall be the other refracted beam carried from T to X , by the unusual refraction.

147. 'If, therefore, the incident beam ST be

perpendicular to the refracting surface, the two beams T V and T X, into which it shall become divided, shall be parallel to the lines C K and C L; one of these beams going through the crystal perpendicularly, as it ought to do by the usual laws of optics, and the other T X by an unusual refraction diverging from the perpendicular, and making with it an angle V T X of about 68° , as is found by experience. And hence the plane V T X, and such like planes which are parallel to the plane C F K, may be called the planes of perpendicular refraction. And the coast towards which the lines K L and V X are drawn, may be called the coast of an unusual refraction.

148. 'In like manner crystal of the rock has a double refraction: but the differences of the two refractions is not so great and manifest as in Iceland crystal.

149. 'When the beam S T, incident on Iceland crystal, is divided into two beams T V and T X, and these two beams arrive at the farther surface of the glass; the beam T V, which was refracted at the first surface after the usual manner, shall be again refracted entirely after the usual manner at the second surface; and the beam T X, which was refracted after the unusual manner in the first surface, shall be again refracted entirely after the unusual manner in the second surface; so that both these beams shall emerge out of the second surface in lines parallel to the first incident beam S T.

150. 'And if two pieces of Iceland crystal be placed one after another, in such a manner that all the surfaces of the latter be parallel to all the corresponding surfaces of the former, the rays which are refracted after the usual manner in the first surface of the first crystal shall be refracted after the usual manner in all the following surfaces, and the rays which are refracted after the unusual manner in the first surface, shall be refracted after the unusual manner in all the following surfaces. And the same thing happens though the surfaces of the crystal be any ways inclined to one another, provided that their planes of perpendicular refraction be parallel to one another.

151. 'And, therefore, there is an original difference in the rays of light, by means of which some rays are, in this experiment, constantly refracted after the usual manner, and others constantly after the unusual manner. For if the difference be not original, but arises from new modifications impressed on the rays at their first refraction, it would be altered by new modifications in the three following refractions; whereas it suffers no alteration, but is constant, and has the same effect upon the rays in all the refractions. The unusual refraction is, therefore, performed by an original property of the rays. And it remains to be enquired, whether the rays have not more original properties than are yet discovered?

152. 'Query 26. Have not the rays of light several sides, endued with original properties? For, if the planes of perpendicular refraction of the second crystal be at right angles with the planes of perpendicular refraction of the crystal, the rays which are refracted after the usual manner in passing through the first crystal will be

all of them refracted after the usual manner in passing through the second crystal, and the rays which are refracted after the unusual manner in passing through the first crystal will all of them be refracted after the usual manner in passing through the second crystal. And, therefore, there are not two sorts of rays differing in their nature from one another, one of which is constantly and in all positions refracted after the usual manner, and the other constantly and in all positions after the unusual manner. The difference between the two sorts of rays, in the experiment mentioned in the twenty-fifth question, was only in the positions of the sides of the rays to the planes of perpendicular refraction. For one and the same ray is here refracted sometimes after the usual, and sometimes after the unusual manner, according to the position which its sides have to the crystals. If the sides of the ray are posited the same way to both crystals, it is refracted after the same manner in them both. But, if that side of the ray which looks towards the coast of the unusual refraction of the first crystal be 90° from that side of the same ray which looks towards the coast of the unusual refraction of the second crystal (which may be effected by varying the position of the second crystal to the first, and by consequence to the rays of light), the ray shall be refracted after several manners in the several crystals. There is nothing more required to determine whether the rays of light which fall upon the second crystal shall be refracted after the usual, or after the unusual manner, but to turn about this crystal, so that the coast of this crystal's unusual refraction may be on this or on that side of the ray. And, therefore, every ray may be considered as having four sides or quarters; two of which, opposite to one another, incline the ray to be refracted after the unusual manner, as often as either of them are turned towards the coast of unusual refraction, and the other two, whenever either of them are turned towards the coast of unusual refraction, do not incline it to be otherwise refracted than after the usual manner. The two first may, therefore, be called the sides of unusual refraction. And since these dispositions were in the rays before their incidence on the second, third, and fourth surfaces of the two crystals, and suffered no alteration (so far as appears) by the refraction of the rays in their passage through those surfaces, and the rays were refracted by the same laws in all the four surfaces: it appears that those dispositions were in the rays originally, and suffered no alteration by the first refraction, and that by means of those dispositions the rays were refracted at their incidence on the first surface of the first crystal, some of them after the usual, and some of them after the unusual manner, according as their sides of unusual refraction were then turned towards the coast of the unusual refraction from that crystal or sideways from it.

153. 'Every ray of light has, therefore, two opposite sides, originally endued with a property on which the unusual refraction depends, and the other two opposite sides not endued with that property. And it remains to be enquired, whether there are not more properties of light by

which the sides of the rays differ, and are distinguished from one another.

154. 'In explaining the difference of the sides of the rays above mentioned, I have supposed that the rays fall perpendicularly on the first crystal. But, if they fall obliquely on it, the success is the same. Those rays which are refracted after the usual manner in the first crystal will be refracted after the unusual manner in the second crystal, supposing the planes of perpendicular refraction to be at right angles with one another, as above, and on the contrary.

155. 'If the planes of the perpendicular refraction of the two crystals be neither parallel nor perpendicular to one another, but contain an acute angle, the two beams of light which emerge out of the first crystal will be each of them divided into two more at their incidence on the second crystal. For in this case the rays in each of the two beams will some of them have their sides of unusual refraction, and some of them their other sides turned towards the coast of the unusual refraction of the second crystal.

156. 'To explain the unusual refraction of Iceland crystal by pressure or motion propagated, has not hitherto been attempted (to my knowledge) except by Huygens, who, for that end, supposed two several vibrating mediums within that crystal. But when he tried the refractions in two successive pieces of that crystal, and found them such as is mentioned above, he confessed himself at a loss for explaining them. For pressures or motions, propagated from a shining body through a uniform medium, must be on all sides alike; whereas by those experiments it appears, that the rays of light have different properties in their different sides. He suspected that the pulses of ether, in passing through the first crystal, might receive certain new modifications, which might determine them to be propagated in this or that medium within the second crystal, according to the position of that crystal. But what modifications those might be he could not say, nor think of any thing satisfactory on that point. And if he had known that the unusual refraction depends, not on new modifications, but on the original and unchangeable dispositions of the rays, he would have found it as difficult to explain how those dispositions which he supposed to be impressed on the rays by the first crystal could be in them before their incidence on that crystal; and, in general, how all rays emitted by shining bodies can have those dispositions in them from the beginning. To me, at least, this seems inexplicable, if light be nothing else than pressure or motion propagated through ether.'

157. Those who have already examined the law of double refraction, as given by Huygens, and its agreement with observations made in all sections of the crystals of Iceland-spar, must experience no small degree of surprize, when they find that Sir Isaac Newton has proposed another law, different from his, and absolutely incompatible with observation. As Sir Isaac remarks that Huygens has described the phenomena more exactly than Bartholinus, there is reason to believe that he made some experiments

on the subject, which confirmed those of Huygens; and yet it is strange that, without assigning any reasons he should reject Huygens's law, and substitute another, entirely inconsistent with the very experiments he has praised. In his speculations respecting the cause of the disappearance and reappearance of the pencil, when light is transmitted through two rhombs of calcareous spar, Newton has been more fortunate; and he has undoubtedly the merit of having first suggested the idea of the polarity of light, and of having described the phenomena of the polarisation of the pencils in Iceland-spar, to original properties possessed by different sides of the rays.

158. A paper entitled *An Account of the Double Refractions in Crystals*, by Father John Beccaria, professor of experimental philosophy at Turin, was read before the Royal Society of London on the 18th of March 1762, and printed in the *Transactions* for that year, vol. lii, p. 486. The principal result of these experiments is, that the double refraction in rock crystal is greatest when the ray is perpendicular to the axis of the crystal, and that the images approached to coincidence as the ray approached to that axis. This conclusion must be considered as of some importance, as it overturns the peculiar law of double refraction, which Huygens had devised for rock crystal alone. According to this law, the double refraction of rock crystal should be the same in every direction; whereas Beccaria has proved that it diminishes as the ray approaches to the axis.

159. Beccaria's paper is concluded with some unimportant queries, in one of which he conjectures that the examination of the double refraction of different crystals may lead to the determination of their structure, and mode of formation.

160. Towards the end of the last century the abbé Haüy began to direct his attention to the kindred subjects of crystallography and mineralogy, and to lay the foundation of that beautiful system which has immortalised his name.

161. Not content with the external examination of mineral bodies, he directed his notice to all their physical properties, and thus availed himself of the lights of natural philosophy, in giving a scientific form to the science of minerals.

162. In accomplishing this great event, he was naturally led not only to observe the double refraction of minerals, but to employ it as an essential character in his descriptions; and it was from this cause, more than from any other, that the attention of philosophers was recalled to a subject which had almost disappeared from modern physics.

163. The following are the general views given by this eminent author in his *Traité de Minéralogie*, vol. i. p. 230, which appeared in the year 1801.

164. 'The quantity of double refraction,' says he, 'or, what is the same thing, the magnitude of the angle formed by the two rays, by means of which the eye sees the two images, varies from one substance to another, all other things being similar, according to the nature of the sub-

stances themselves. In zircon, for example, the double refraction is very strong, while it is much less sensible in emerald. Besides, this quantity varies in each substance from different causes. In general it increases or diminishes with the refracting angle, or that which is formed by the two faces through which we look at the object. But there is another cause of variation, which combines itself with the preceding, and which depends on the position of the refracting surfaces, relative to the faces of the primitive form; and such is the influence of this cause that with two equal refracting angles, differently situated, we may have distances perceptibly unequal between the images of the same object, and there is even a limit where the effect of double refraction becomes nothing, that is, when the two images are combined into one.

165. 'This limit takes place in quartz and in emerald where one of the faces containing the refracting angle is perpendicular to the axis. It takes place in sulphate of barytes when one of the same faces, being parallel to the axis is at the same time parallel to a plane passing through the long diagonals of the base of its primitive form.

166. 'On this subject I possess only a small number of observations; but it is probable that all the substances which have double refraction are included in one or other of the two preceding cases, which give the limits of all the positions that the refracting surfaces can have, relative to the primitive form. But, as the position parallel to the axis is variable in its turn, between several limits which correspond to the diagonals and to the sides of the base of the primitive form, it is necessary to know which of these last limits is that which belongs to each substance.

167. 'I shall show, under the article Emerald, how a mistake conducted me to these results; and I confess that there remains still an uncertainty respecting the refraction of some substances, as I have not had leisure to multiply my researches sufficiently, in order to ascertain if a crystal, which gives only a single image of objects, would produce two after being cut in a particular manner.

168. 'Another observation, which will be of some use in generalising the theory of these phenomena, consists in this, that all the substances whose integrant molecule is remarkable by its symmetry have single refraction. Such are those which have for their primitive form the cube, the regular octahedron, and the rhomboidal dodecahedron.

169. 'Experiments on this object have hitherto been made only on those bodies which are called stones. I have extended these experiments to several called salts, and also to inflammable substances, and to metallic substances, oxidated and united to other substances, and I have found that there is no class of minerals which does not present bodies endowed with double refraction.'

170. After mentioning the methods which he employed for observing the double refraction, but which are entirely superseded by methods equally simple and much more certain, our author remarks, 'That it would be difficult to

find a character more prominent than that which is drawn from double refraction, since it belongs to the very essence of the minerals in which it exists; and that it is fortunate that we are able, in this way, to supply the disappearance of crystalline forms by a physical observation, and thus to read in a certain degree in the interior of the stone, when its exterior no longer speaks to the eye.'

171. The following is the list of substances which have double refraction, as given by the abbé Haiüy:—

Haiüy's Table of Doubly Refracting Crystals.

1. Carbonate of lime strong.
2. Sulphate of lime.
3. Sulphate of barytes.
4. Sulphate of strontian.
5. Borate of soda.
6. Quartz.
7. Zircon, very strong.
8. Cymophane.
9. Topaz.
10. Emerald.
11. Corundum.
12. Euclase, strong
13. Feldspar.
14. Peridot, strong.
15. Mesotype.
16. Sulphur, strong.
17. Mellite.
18. Carbonate of lead.
19. Sulphate of iron.
20. Arragonite, strong.

Haiüy's Table of Crystals with Single Refraction.

- | | |
|------------------------------|------------------------|
| 1. Fluats of lime. | 6. <i>Amphigene.</i> |
| 2. <i>Phosphate of lime.</i> | 7. <i>Tourmaline.</i> |
| 3. <i>Telesie.</i> | 8. <i>Arinite.</i> |
| 4. Spinelle. | 9. <i>Disthene.</i> |
| 5. Garnet. | 10. Sulphuret of zinc. |

172. In his article on the Double Refraction of Iceland Spar, Haiüy gives a detailed account of various experiments, that possess no very particular interest. He demonstrates by experiment the error of Newton's law, which we have already mentioned. He establishes the truth of the Huygenian law; but erroneously remarks, that it accords with observations only within certain limits, and he adopts the physical hypothesis of Newton, that the particles of light have two kinds of poles, on which the Iceland spar exerts a particular action, whose centre is placed in the region of the small solid angle of the crystal.

173. The only observations which we have to offer on the preceding articles, relate to the remark, that the cubical octahedral, and rhomboido-dodecahedral crystals have single refraction. The only meaning which can be attached to this remark is, that some of these bodies have single refraction; for, out of the ten crystals which Haiüy gives as having only single refraction, there are no fewer than six which belong to none of the above primitive forms, viz. those marked in italics.

174. The absolute incompatibility of Haiüy's conclusions with his own facts, will appear still more strikingly from his list of transparent crys-

als, which have the cube for their primitive form, viz.

| | |
|-------------------|---------------------------|
| <i>Boracite.</i> | <i>Analcime.</i> |
| Muriate of soda. | <i>Scheelin calcaire.</i> |
| <i>Amphigene.</i> | <i>Oxide of tin.</i> |

every one of which, with the single exception of muriate of soda, has double refraction.

175. Believing, therefore, that all these five crystals had no double refraction, when they actually possessed it, Haüy deduced the conclusion that all cubical crystals had single refraction, whereas this property belonged only to one out of six. The conclusion, however, is still true, and has been established by more numerous and recent observations, both optical and crystallographical. *Boracite* belongs to the rhomboidal system of crystallisation; *scheelin calcaire*, and *oxide of tin*, to the pyramidal system; *amphigene* to the prismatic system; and *analcime* to the composite system. Muriate of soda, therefore, is the only crystal left among the cubical forms to authorise the deduction of our author.

176. In the Bakerian lecture for 1801, our learned and ingenious countryman, Dr. Thomas Young, pointed out the advantages of the Huygenian theory of light, in affording an explanation of several phenomena which had not been accounted for by any other hypothesis. Dr. Wollaston, who had invented a new method of measuring the refractive powers of bodies, conceived the idea of employing this method to examine the accuracy of Huygens's theory of double refraction. Huygens had himself done this by direct experiment; but it was desirable to have the same examination repeated by a philosopher of Dr. Wollaston's accuracy, and by a method which promised to afford very nice results. In this way Dr. Wollaston obtained the following results:—

| | Index of refraction. |
|--|----------------------|
| 1. When the line of sight bisects an acute angle of a natural surface of the spar | 1.488 |
| 2. When the plane of incidence is parallel to one of the sides | 1.518 |
| 3. In a direction at right angles with either side | 1.537 |
| 4. In the plane bisecting an obtuse angle | 1.571 |
| 5. On a surface perpendicular to the axis of the rhomb | 1.488 |
| 6. The regular refraction found by the ordinary method, from an average of several experiments | 1.657 |
| 7. The inclination of two surfaces | 105° 8' |
| 8. Inclination of a refracted perpendicular ray to the perpendicular | 6° 16' |

Having obtained these results, Dr. Wollaston then contrasts them with those calculated by Haüy.

| Exp. | Observed. | Calculated. |
|----------------|-----------|-------------|
| 2 | 1.518 | 1.5215 |
| 3 | 1.537 | 1.539 |
| 4 | 1.571 | 1.5736 |
| Observed angle | 6° 16' | 6° 7½' |

177. Dr. Wollaston considers the result of this comparison as highly favorable to the Huygenian theory; and he adds that though the existence of two refractions at the same time, and in the same substance, be not well accounted for, and still less their interchange with each other, when a ray of light is made to pass through a second piece of spar, situated transversely to the first; yet the oblique refraction, when considered alone, seems nearly as well explained as any other optical phenomenon.

178. The attention of the illustrious La Place was no doubt directed to the subject of double refraction by the labors of Dr. Young and Dr. Wollaston, who had drawn the attention of the scientific world to this recondite branch of physical science.

179. These investigations are contained in a memoir, entitled *Sur les Mouvements de la Lumière dans les Milieux Diaphanes*, which was read at the Institute on the 30th of January, 1808, and published in their *Memoirs* for 1809, p. 300—342.

180. It occurred to M. La Place that it would be highly interesting to refer the law of Huygens to attractive and repulsive forces, as Newton had done the ordinary refraction. In employing the principle of least action for this purpose, he remarks that, in the case of the extraordinary refraction, the velocity of the light within the crystal must be independent of the manner in which it enters, and must depend only on the position of the ray with respect to the axis of the crystal, that is, on the angle which the ray forms with a line parallel to the axis.

181. In setting out from this datum, M. de La Place arrives at two differential equations given by the principle of least action, and in which the interior velocity is an indeterminate function of the angle, which the refracted ray forms with the axis of the crystal. In the first case which he examines, the square of the velocity of the ray is increased in the interior of the medium by a constant quantity (which is the case of ordinary transparent mediums), and this constant quantity expresses the action of the medium upon light. The two equations, then, show that the incident and refracted ray are in the same plane, and that the ratio of the sines of their inclination to a vertical line is constant.

182. In the next case the action of the medium upon light is equal to a constant quantity, plus, a term proportional to the square of the cosine of the angle which the refracted ray forms with the axis; for as this action is equal on all sides of the axis, it must depend only on the even powers of the sine and cosine of that angle. The expression of the square of the interior velocity is thus of the same form as that of the action of the medium. By substituting this expression in the differential equation of the principle of least action, M. de La Place then determines the formulæ of refraction in relation to this case, and he finds that they are identically those which are given by the law of Huygens. Hence it follows, that the Huygenian law satisfies both the principle of least action, and the condition that the interior velocity depends only on the angle formed by the axis and the refracted ray.

183. M. de La Place then proceeds to remark, that the hypothesis of Huygens, that the velocity of the ray is expressed by the variable radius of the ellipsoid, does not satisfy the principle of least action, but that it satisfies the principle of Fermat, which consists in this, that the light arrives from a point taken without the crystal, to a point taken within it, in the least time possible. For it is obvious that this principle becomes the same as that of least action, by reversing the expression of the velocity. Hence both these principles conduct to the law of refraction discovered by Huygens, provided that, in the principle of Fermat, we assume with Huygens the radius of the ellipsoid as a measure of the velocity, and that, in the principle of least action, we assume this radius as representing the time employed by light in traversing a determinate space taken for unity.

184. The identity of the law of Huygens and the principle of Fermat's results, as M. de La Place has remarked, from the ingenious way in which Huygens considers the propagation of the waves of light, so that his way of considering it, though very hypothetical, represents nevertheless all the laws of refraction which may be due to attractive and repulsive forces, since the principle of Fermat gives the same laws as that of the least action, by reversing the expression of the velocity.

185. It will be evident that, in a work like the present, our space will not admit of further analysis of M. de La Place's Memoir, but merely to remark, that the formulæ which he deduces from the principle of least action, and that of Fermat, are found to be identical with the elegant formulæ which Malus deduced from the construction of Huygens. For a variety of full and interesting particulars, on this curious part of optical science, we must refer our readers to the Journal edited by Dr. Brewster.

186. POLARISED LIGHT.—It has been usual to commence this subject by considering the well known phenomenon of double refraction, a property possessed by all crystals, the primitive form of which is neither the cube nor regular hexahedron. Of all known bodies the Iceland spar, or rhomboidal carbonate of lime, shows the fact with the greatest certainty; and as it is a mineral easily procured, and of sufficient size and transparency, it has been generally made use of. The crystals of this substance have the form of a rhomboid, having six acute solid angles, and two obtuse. These last, x and α , fig. 10, are formed by the junction of three equal plane angles, and equally inclined to each other. The line x , joining these two angles, is therefore similarly situated with respect to the three planes forming each angle, and is called the axis of the crystal. A plane, perpendicular to the natural surface of the crystal, and coinciding with this line, is called its principal section, which term is also applied to any plane parallel to it.

187. We have already stated that an object seen through the crystal in its natural form (that form to which it is easily brought by cleavage) will give two images, one of which will appear in its situation according to the common law of refraction,

while the other will be observed thrown towards the lower obtuse angle, but always in the plane of the principal section. (The most convenient method to examine these facts is to pierce a small hole through any opaque plate, which may be applied to the lower surface of the crystal, and directed to a sheet of white paper). Let x A, x B, fig. 11, be the principal section of the crystal, and L a pencil of light falling on its surface, one part of the light will proceed in the ordinary direction (we will suppose perpendicularly), and is therefore called the ordinary ray, while the other portion of the light deviates considerably from this direction, and is called the extraordinary ray. I o will represent the ordinary, and I e the extraordinary ray.

188. Let the crystal be cut by two planes A B, and C D, fig. 12, parallel to the axis, and two other planes A C, and D B, perpendicular to the axis, to allow an object to be seen through it in the direction A C, or A B: it will be found that the two images will be farther separated, viewed in the direction A C, which is perpendicular to the axis, while in the direction of the axis there will be only one image. The inference from these experiments is, that there exists some peculiar force acting on the light passing through the crystal, producing a separation of the rays, and that this force emanates from the axis itself. As this produces a deviation of the second image towards, or from, the axis of the crystal, it is considered positive or negative, or, by Biot, attractive or repulsive.

189. The two rays into which a pencil of light is divided in passing through a crystal of Iceland spar are always of the same intensity, and always in the plane of the principal section. But the two emerging rays are not merely diminished in intensity by the division of the light between them, but have undergone a most important modification; for, if the rays be made to pass through another crystal, placed similarly to the first, there will be no subdivision of the light; the two images will be merely separated to a greater distance, from the increased thickness through which the light passes. If now the two crystals are so placed that the principal sections are at right angles to each other, there will still be only two images, but the ray ordinarily refracted in the first will become extraordinary in the second, and the extraordinary, ordinary. But at all intermediate positions of the two crystals there will be a subdivision of each ray, consequently four images: these four images will be of equal intensity when the principal sections of the two crystals are at an angle of 45° to each other; at all other angles one or other of the images diminish in intensity, as the principal sections approach to a perpendicular or parallelism: not by the coalescence of the two images, but by the gradual diminution of the intensity of one, and the augmentation of that of the other. In plate III. figs. 1, 2, and 3, we have supposed the rhomboids reduced to the form of cubes in all three, the axis is denoted by x , and the direction of the rays by the lines passing through the figure, and the letters e and o the extraordinary and ordinary

Fig. 1.

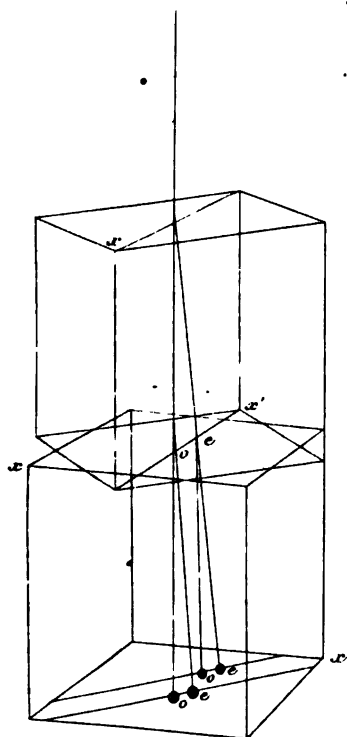


Fig. 2.

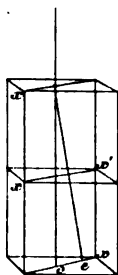


Fig. 3.

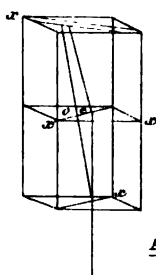


Fig. 7.

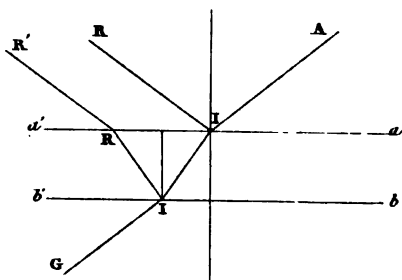


Fig. 8.

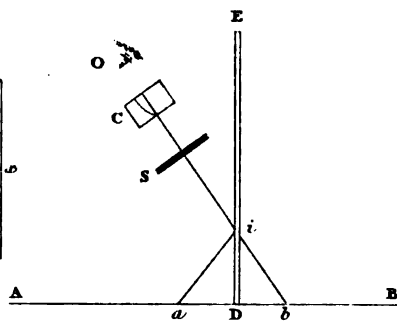


Fig. 4.

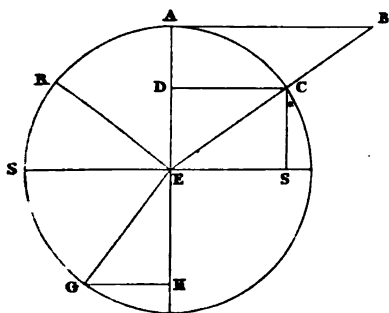


Fig. 9.

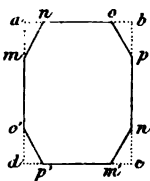


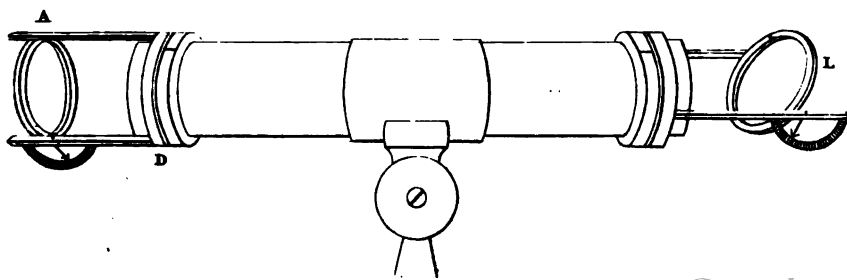
Fig. 10.



Fig. 5.



Fig. 6.



rays. It is thus seen that each emerging ray is only subject to a farther division, in particular positions of the second crystal; whereas natural light is always divided into two portions of equal intensity. Each ray has suffered a physical change; it is not acted on by the force of the second crystal, as natural light would be, but requires that the force be applied in a particular direction relatively to the modification it has received from the first crystal. This has been called *polarisation*. We know nothing of the poles, nor even of the molecules to which these poles are said to belong; it must be considered merely as a conventional term to express a phenomenon; and, to avoid the repetition of the conditions producing it, it is usual to consider the poles of the ordinary ray as coinciding with the principal section of the crystal, and those of the extraordinary ray in a plane perpendicular to it.

190. In these experiments an effect is produced on the two rays, by the passing through a crystal, which so modifies them that it requires the action of a second crystal to be exerted in two directions, at right angles to each other, to produce a similar effect. As direct light is always divided into two rays of equal intensity by a double refracting crystal, it may be used as a test to discover and ascertain the direction of polarisation.

191. When light is reflected from the surface of transparent bodies it is found to be polarised in the plane of reflection, more or less completely, according to the angle formed with the surface. This angle varies for different substances, and to Dr. Brewster we are indebted for a law connecting the angle with the index of refraction of the given body, viz. 'that the tangent of the angle of polarisation, measured from the perpendicular, is equal to the index of refraction,' when complete polarisation, or the greatest the body is capable of, is produced.

192. The index of refraction is a number having the same proportion to 1 that the line of the angle of incidence has to the angle of refraction. It is, therefore, constant for all angles of incidence in the same body. It is generally calculated for light passing from a vacuum into the given body.

193. From this law are deduced three consequences:—

1. That the complement of the angle of polarisation is equal to the angle of refraction.

2. That the reflected ray is perpendicular to the refracted ray.

3. That the angles of polarisation and refraction are together equal to a right angle.

194. Let CE, fig. 4, be the incident ray at the angle of complete polarisation, RE the reflected ray, and EG the refracted ray.

The sine DC : sine GH :: index : 1
But index = tangent AB; and radius AE = 1
As AB : AE :: DC : GH

AB : DE :: DC : DE :: GH = DE = CS, and the angle CES = angle GEH.

HES is a right angle, from which is taken GEH. But as GEH = CES = RES — RES + GES = a right angle.

195. This law gives an easy method to determine the angle of polarisation of any body of

which the index of refraction is known. Look in a table of tangents for the given index as a tangent, and the corresponding angle will be the angle of polarisation. If such a table be not at hand, let SS be the surface, and AE drawn perpendicularly; from a scale make AB = index, AE being 1. Join BE, and the angle AEB will be the required angle.

196. The index is generally given, for light passing from a vacuum; if it be required to determine the index under other circumstances, divide the index of the given body by the index of the medium from which it passes, and the quotient will be the index required. In bodies the opacity of which prevents the direct measurement of the angle of refraction, the angle of polarisation gives the index of refraction; if this law be rigorous, which it appears to be for all bodies which have been yet examined, though M. Fresnel seems to think it more probably an approximation.

197. We may here remark that some authors give the angle of polarisation measured from the surface: and sometimes the index of refraction is calculated on the passage from air.

198. We may here mention that Malus and Biot state, that the peculiar influence of crystals is not excited on light reflected from their surfaces; and that the angle of polarisation is the same whether the plane of incidence be parallel, perpendicular, or oblique, to the principal section of the crystal. But Dr. Brewster found a difference of more than 2°. He found the angle of polarisation to be 57° 14' when the incidence was in the plane of the principal section, and 59° 32' when in a plane perpendicular to it. The surface was that produced by a careful cleavage of the crystal.

199. One of the first laws of optics is, that 'light falling on a plane mirror is reflected at an angle equal to the angle of incidence;' but, if this mirror be transparent, the light so reflected is found to have received a polarity in the plane of reflection, more or less complete as the angle of incidence approaches the angle of polarisation for the substance employed. In fact there is some trace of polarisation discernible in light reflected from every body, at every angle of incidence except the perpendicular; but this in so feeble a degree, that we may consider it, at present, insensible, except from transparent bodies.

200. We have already explained that there are, for some bodies, certain angles, at which complete polarisation takes place; in some others, though very transparent, yet of high refractive power, complete polarisation does not take place at any angle, as in the diamond; in others, as black marble, ebony, black varnishes, where the refractive density is less, complete polarisation takes place, though they be opaque. This angle for water is 62° 45' from the perpendicular, and about 55° for glass.

201. In our explanation we may have recourse to an instrument, which, though not indispensable, will be found useful in many experiments where accuracy is required. But, for the satisfaction of any one as to the general facts, two pieces of unsilvered mirror glass are all that will

be essential, as in fig. 5. The reflected ray is seen to descend upon the plate A, which would have been polarised if the angles had been 35° , and consequently not reflected. But partial polarisation is produced by the plate B. The instrument shown at fig. 6 hardly requires description. It consists of a tube having a frame at each end, holding reflectors A and B, which are capable of being adjusted to any angle with the axis of the tube, and of being turned round the tube so that the planes of reflection may be at any angle to each other. Suppose the two mirrors (of unsilvered glass) inclined on their axis to the polarising angle 35° , remove the mirror B, and make a ray of natural light passing through the axis of the tube fall on the mirror A, it will be found that the light will be reflected equally in whatever direction the mirror is turned by the ring D, whether upwards or downwards, to the right or to the left. Let now the mirror B be replaced, and the apparatus so placed that the light reflected from it falls on the other mirror A, if the plane of reflection of the two mirrors coincide; that is, if the plane of each reflection is towards the same direction. To an eye placed opposite A there will be a reflection of a considerable part of the light incident on it. After being satisfied that there is in this position a partial reflection of the light, turn the ring D a quarter round either to the right or left, and with it the mirror A (the inclination of which to the axis remains the same), and on looking on the mirror there will be now found a total obscuration, that is, no light will be reflected, the whole passing through the glass. To be satisfied that this does not take place from any accidental derangement of the instrument, it is only necessary to turn the mirror slowly from one position to the other, and a gradual diminution of the intensity will be observed, passing from its maximum in the first position to complete obscuration in the last, or when the plane of the first reflection is at right angles to what would have been the plane of the second reflection had the light been direct.

202. A farther proof that this is no deception is afforded by substituting a metallic reflector in the place of the mirror B; in which case no such alteration takes place.

203. To return to the experiments. Continue to turn the mirror A gradually in the same direction, so that the reflection is again parallel to the first, but in an opposite direction, and the light will be again at a maximum; and, if the mirror be still turned in the same direction until it has made three-fourths of a revolution, the light reflected will again be reduced to nothing.

204. In this experiment we see that light, having been reflected from a surface at a certain angle, is entirely transmitted by another mirror, if the plane of incidence on the second mirror is perpendicular to the plane of incidence on the first, while natural light would have been equally reflected in every position.

205. It must be observed that, if the angle of reflection of either mirror be greater or less than the angle of polarisation, there will not be a total obscuration. The angle made by the two planes of reflection is often called the azimuth.

To succeed perfectly in this experiment the back of each mirror should be blackened, to prevent the admission of extraneous light. It will now be not difficult to show that the direction of polarity, in the reflected light, is to the plane of reflection, similar to the polarity of the ordinary ray in Iceland spar to its principal section, or an identity of the modification produced in the reflected ray and the modification produced by the action of the crystal on the ray ordinarily reflected; for if the ray reflected from water or glass at the polarising angle be received on a crystal of Iceland spar, the principal section of which coincides with the plane of reflection, the ray entering the crystal will proceed through it in the same direction that the ordinary ray, emerging from another crystal, would have proceeded. But, if the principal section of the crystal be placed perpendicular to the plane of reflection, the ray will be reflected extraordinarily; but in both positions there will be no bifurcation of the ray. If the principal section of the crystal be any otherwise situated, as to the plane of reflection, there will be two rays, but of equal intensity, when the angle contained between these two planes is 45° . If, again, the ordinary ray emerging from a crystal be made to fall at the proper angle, on the surface of water, or any other reflecting surface capable of polarising light completely, it will be reflected when the principal section and plane of reflection coincide, but entirely transmitted when the planes are perpendicular to each other. But, if the extraordinary ray fall on the surface, the reflection will take place when the planes are at right angles, and a total transmission will result when the planes coincide.

206. We are therefore justified in assuming that the physical change the light has suffered is the same in the two cases. That whether an ordinary ray be examined by subsequent reflection, or the reflected ray by a doubly reflecting crystal, the influence is, that the polarity of each is in the same direction: the one in the plane of the principal section, and the other in the plane of reflection.

207. Light is not only reflected from the first surface of transparent bodies, but another portion is reflected from the second surface. We will suppose these two surfaces parallel, and it will not be difficult to see, that if the light be completely polarised by reflection from the first surface 'a', fig. 7, the portion reflected from the second surface 'b' will also be completely polarised, and in the same plane.

208. Let A I be the incident ray, and I R the reflected polar ray; I I the refracted ray, partially reflected and refracted to R' and I' G, the remaining refracted light will be perpendicular to I' R', the reflected ray, a condition we have seen before producing complete polarisation.

209. From various experiments it has been proved that the quantity of light reflected, even from the two surfaces of a transparent body, is small in proportion to the incident light, and it is now convenient to enquire the condition of the refracted portion, under circumstances in which polarisation of the reflected light is produced. If the ray I G', fig. 7, be examined by a rhomboid,

it will be found divided into two rays, but not of equal intensity; for the ordinary or extraordinary ray will be found the more intense, as the section of the crystal is parallel or perpendicular to the plane of refraction. This condition of light is called partial polarisation, and is the same as the state of reflected light when the incidence is not such as to produce complete polarisation.

210. M. Arago gives the following experiments:—Let us suppose a plate of glass, *ED*, fig. 8, placed perpendicularly on a sheet of fine white paper *AB*, the eye placed at *O* will see at the same time the reflected ray *aio*, and the refracted ray *bio*; interpose an opaque plate perforated with a small hole *S*; let the eye at *O* be furnished with a doubly refracting crystal *C*. If by a black screen, placed between *b* and *i*, we stop the ray *bi*, which would have been transmitted by the glass plate, the hole in the plate *S* is illuminated by the reflected light alone; and if the principal section of the crystal coincide with the plane of reflection, we see two images of the pole, of which the ordinary is the most brilliant. If the screen be now so placed as to intercept the reflected ray, *aio*, there will be still two images, but now the extraordinary will be the most brilliant.

211. Now, if the screen be entirely removed, allowing both reflected and refracted light to reach the crystal, the intensity of the two images is found by actual experiment to be exactly equal. It is hence to be inferred, that the plane which contains the poles of light, polarised by transmission, is perpendicular to the plane which contains poles of light polarised by reflection; and that the quantity of polarised light, contained in the ray transmitted by a transparent plate, is exactly equal to the quantity of polarised light contained in the ray reflected from its surface, whatever the angle of incidence may be. M. Arago observes, that a body which, at its angle of complete polarisation, would reflect half the incident light from its surface, would also completely polarise the transmitted ray; and that when there is no transmission of light there is no polarisation; and which seems proved experimentally, as no trace of partial polarisation is discoverable in the light reflected from the interior of a glass prism, when the reflection is total.

212. As transparent substances reflect but a small portion of the incident rays, the quantity of polarised light in the transmitted ray is small in proportion to the light which has not undergone that modification. Dr. Brewster considers the transmitted ray as consisting of one portion completely polarised in a plane at right angles to the plane of incidence, and another portion of light 'which has suffered a physical change more or less approaching to complete polarisation.' Light, having passed through a pile of plates, is at last polarised in a plane perpendicular to the plane of polarisation of the reflected light. This effect requires the agency of twenty-four plates at an incidence of 61° ; 'consequently,' says Dr. Brewster, 'twelve plates will not polarise the whole pencil at that angle. Let us now suppose that the quantity not polarised amounts to twenty out of 100, then if these twenty were abso-

lutely unpolarised, and in the same state as direct light, they would require to pass through twenty-four plates in order to be completely polarised. But experiments prove that they require to pass only through twelve other plates to be completely polarised; it therefore follows that the twenty rays have been half polarised by the first twelve plates, and the polarisation completed by the other twelve.'

213. This reasoning may be good; but as Malus, Biot, and Arago, consider this partially polarised light to consist of light completely polarised, and light in the state of direct or natural light—and as this view of the question admits of a ready explanation—we shall adopt it.

214. Let *a*, *b*, *c*, *d*, be supposed to represent the successive plates through which the incident ray 1000 is to pass, and at a given angle, fifty out of 100 be completely polarised by reflection, and a similar quantity of rays by refraction; the light emerging from the first lamina will consist of 900 in the state of direct light, and fifty of light polarised in a plane perpendicular to the plane of incidence. We have already seen that light polarised in one plane will not be reflected in a plane perpendicular to its plane of polarisation, and consequently the portion fifty of transmitted light will escape reflection from the lamina *b*, and therefore the light reflected from *b*, which we have supposed one-twentieth of the incident light, must be taken from the 900 of direct light. In this manner we may suppose the quantity of direct light constantly diminished, and the polarised light increased by each succeeding transmission. According to this view, complete polarisation could never be produced, but the quantity of direct light, after a few transmissions, would be absolutely imperceptible.

215. It cannot be necessary to explain the result of submitting the ray emerging from a succession of plates to another pile of plates, to a doubly refractive crystal, or to a reflection from a polarising surface. It is in all respects similar in its polarisation relatively to the plane of incidence on the first surface to the extraordinary ray transmitted by a crystal, relatively to its principal section.

216. We will, however, mention one consequence of the foregoing laws; that polarised light, falling on the first surface of a pile of plates, will be partially reflected when the plane of incidence coincides with the plane of polarisation; and, a farther portion being also reflected at each successive plate, an eye placed at the back of the plates will receive no sensible quantity of light. If, on the contrary, the plane of polarisation be perpendicular to the plane of incidence, the whole light will be transmitted. It therefore follows that an apparatus may be constructed of the most transparent plates of glass, in two piles or bundles, forming a system perfectly transparent in one position of the piles, yet perfectly opaque in another. This effect is only to be produced by a great number of plates of glass, if the incidence be near the perpendicular; yet some substances possess this property of polarising transmitted light, whatever the incidence. A thin plate of tourmaline, cut parallel to the axis of the crystal, completely polarises the light at any incidence

in a plane perpendicular to the axis, and a second plate will transmit or stop all the rays, as the axis of the two plates are parallel or perpendicular to each other.

217. Dr. Brewster found that a plate of agate, having surfaces perpendicular to its lamina, about one-fifteenth of an inch in thickness, completely polarised the transmitted light.

218. Dr. Brewster, in the course of his experiments on the absorption of polarised light, had occasion to investigate the law of a very interesting class of phenomena, which appeared by the transmission of common light in different directions through crystallised bodies. Cordier, when he discovered the dichroite, observed the two colors of the light which it transmitted in different directions, and gave it the name of dichroite on the presumption that nature had confined to this mineral the property of giving two colors. The count de Bournon had observed the double color in small crystals of mica, and the marquis de Drée had noticed a similar fact in the tourmaline. During the experiments of Dr. Brewster he found that dichroism was a very common property of crystallised bodies; that it was related to the axes of double refraction, whether the crystal had one or more axes; and that it arose from the absorption of common light modified by the doubly refracting forces of the crystal.

219. As the phenomena of dichroism are very beautiful, and can be seen without any apparatus and merely by exposing the crystals to a common light, we shall describe the most important facts as they are seen in mica, augite, and tolite.

220. There are many crystals of mica which exhibit the phenomena of dichroism, but it is only in some of the small hexahedral crystals, which are transparent in a direction perpendicular to the lamina, that they are seen to the greatest perfection.

221. In one of these crystals, where the inclination of the resultant axes was about 11° , Dr. Brewster found that it was highly transparent in a direction coincident with the plane of the laminae, even at a thickness of one-sixth of an inch; in this position the extraordinary ray only was transmitted. As the inclination of the ray to the laminae increased, the intensity of the transmitted light diminished; and, in a direction perpendicular to the laminae, the crystal was perfectly opaque. * A candle, whose light was freely transmitted through a thickness of 0.243 of an inch across the faces of the hexagonal prism, was completely invisible through the terminal planes when the thickness was only 0.040 of an inch. Another crystal, which in one direction was as transparent as the ordinary specimens of olivine, would not admit through a thickness of one-tenth of an inch a single ray of the meridian sun on the 20th of May, when it passed along the axis of the prism. The ordinary ray, which was entirely lost in one direction, became gradually visible in thin plates, and at last of equal intensity to the other ray, as the ordinary light formed a greater angle with the laminae.

222. Out of a piece of yellowish-brown agate without any crystalline form, Dr. Brewster cut plates with parallel and well-polished surfaces. When one of these plates was exposed vertically

to common light, the transmitted light had a moderate intensity. When it was inclined to one side in the plane of one of its neutral axes, the light became more and more intense as the obliquity increased, notwithstanding the increased thickness of the mineral through which the light had to make its way. Upon examining the transmitted light, with a prism of calcareous spar, it was found to be all polarised in a plane perpendicular to the plane of inclination.

223. When the plate was now inclined from this last position, in the opposite direction, but still in the plane of the same neutral axis, the intensity of the light gradually diminished, till, on the other side of the perpendicular, the plate became absolutely impervious to the strong rays of the sun. Upon again examining the transmitted light with a prism of calcareous spar, before the plate had become opaque the pencil which had formerly vanished now re-appeared, and gradually increased in intensity becoming more and more green, while the other pencil, which became fainter, grew more and more red, till at a very great obliquity the one pencil became perfectly green, and the other deep blood-red. By exposing the plate to the polarised light of the sun, the red and green were alternately absorbed, according to the position of the neutral axis with respect to the plane of primitive polarisation.

224. If we now take two plates of augite, one of which has been cut from the other, and adjust each of them separately in a position where the sun's rays are very much enfeebled: if they are then brought together, without altering the inclination of the incident light, the sun's rays will penetrate through both the crystals, even though the one is turned round before the other, the incidence remaining the same. If, on the contrary, we adjust each of the plates separately, in a position where the transmitted light is a maximum, and where the eye cannot endure the strength of the solar ray; and if they are then brought together, so that the planes of incidence are transverse to one another, not a single ray of light will reach the eye. The cause of this is obvious; as the light transmitted through the first plate is all polarised in one plane, it is all absorbed by the second plate when placed in a transverse position. Though this same fact is seen in agate, yet it becomes doubly interesting to observe the light all polarised in one plane, when the transmitted pencil is a maximum.

225. Iolite, so called by Haiiy from its bluish-violet color, crystallises in six or twelve-sided prisms, which appear of a deep blue color when seen along the axis, and of a yellowish-brown color when seen in a direction perpendicular to the axis. If $abcd$, fig. 9, is a section of a prism of iolite, by a plane passing through the axis of the prism, the transmitted light will be blue through the faces ab and dc , and yellowish-brown through ad , bc , and in every direction perpendicular to the axis of the prism. If we grind down the angles a, c, b, d , so as to replace them with faces m, n, m', n' , and op, o', p', p' , inclined $31^\circ 41'$ to ad , or to the axis of the prism; then, if the plane $abcd$ pass through the resultant axes of double refraction, we shall observe, by

Fig. 6.

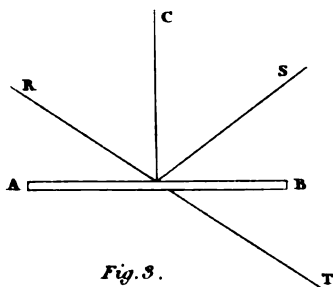


Fig. 3.

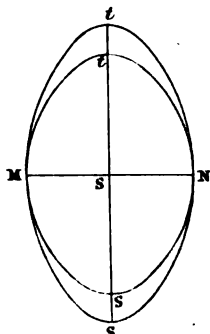


Fig. 4.

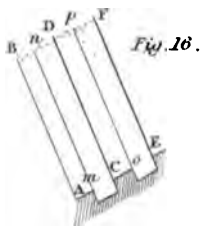
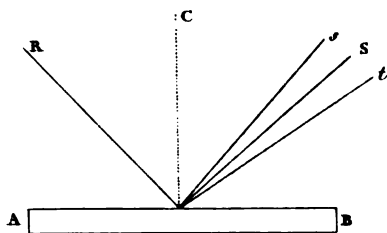


Fig. 14.

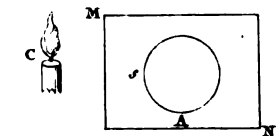


Fig. 15.

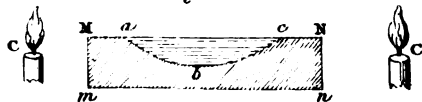


Fig. 5.

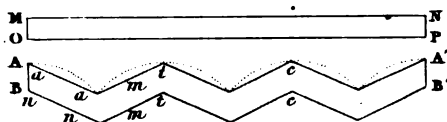


Fig. 2.

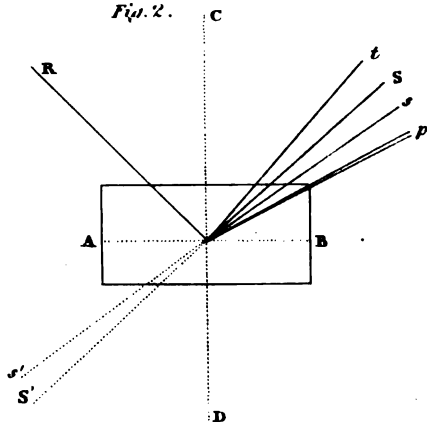


Fig. 1.

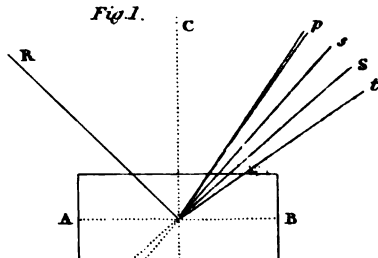


Fig. 7.



Fig. 9.



Fig. 11.

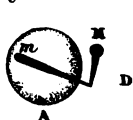


Fig. 8.



Fig. 10.



Fig. 12.



transmitting polarised light through the crystal in the directions ac , bd , and subsequently analysing it, a system of rings round each of these axes. The system will exhibit the individual rings very plainly if the crystal is thin; but if it is thick we shall observe, when the plane $abcd$ is perpendicular to the plane of primitive polarisation, some branches of blue and white light, diverging in the form of a cross from the centre of the system of rings, or the poles of no-polarisation, as shown at p and p' , fig. 10, where the shaded branches represent the blue ones. The summits of the blue masses at p and p' are tipped with purple, and are separated by whitish light in some specimens and yellowish light in others. The white light becomes more blue from p and p' to o , where it is quite blue, and more yellow from p and p' to c and d , where it is completely yellow. When the plane $abcd$ is in the plane of primitive polarisation, the poles p, p' are marked by spots of white light, but every where else the light is a deep blue.

226. In the plane $cadb$, fig. 10, the mineral, when we look through it at common light, exhibits no other color but yellow mixed with a small quantity of blue, polarised in an opposite plane. The ordinary image at c and d is yellowish-brown, and the extraordinary image faint blue; the former acquiring some blue rays, and the latter some yellow ones from c and d to a and b , where the difference of color is still highly marked. From a and b towards p and p' the yellow image becomes fainter till it changes into blue, and the weak blue image is reinforced by other blue rays, till the intensity of the two blue images is nearly equal. The faint blue image increases in intensity as the incident ray approaches from c and d to p and p' , and the yellow one acquiring an accession of blue light, becomes bluish-white. From p and p' to o the ordinary image is whitish, and the other deep blue; but the whiteness gradually diminishes towards o , where they are both almost equally blue, the ordinary image being more luminous at o . From a and b to o the yellowish image becomes more blue, and the bluish image also more blue.

227. The principal axis of iolite is negative, and its greatest refracted image is purplish-blue, while the ordinary or least refracted image is yellowish-brown, passing into one another as above described. The index of the ordinary refraction is about 1.549; and the mineral belongs to the prismatic spectrum of Moh's, though both this mineralogist and M. Haiiy place it under the rhomboidal system.

228. The splendid exhibition of colors which distinguishes mother-of-pearl from every other substance, and the successive development of fresh tints by every gentle inclination of the plate, have always been ascribed to the lamellated structure of the shell, and have been regarded as a fine proof of Newton's theory of the colors of natural bodies. Dr. Brewster has given an account of some experiments which he performed on this substance, in the Transactions of the Royal Society for 1814, and he observes, that he had no disposition to call in question this explanation, nor do the general train of his experiments lead him to such an enquiry. In examining the

colored rings which mother-of-pearl, like the topaz, exhibits by polarised light, and in ascertaining the relation between its refractive power and the angle at which it gives polarity to the reflected ray, he was under the necessity of grinding and polishing, with the utmost care, various plates of this substance. The development of new colors and the extinction of others, which took place during these processes, indicated the operation of some unknown and extraordinary cause, and encouraged him to pay the most minute attention to all the phenomena which were presented. The results of this investigation we shall endeavour to explain under the four following heads

I. On the optical properties peculiar to mother-of-pearl.

II. On the communication of these properties to other bodies.

III. On the causes by which these phenomena are produced.

IV. On a new species of polarisation peculiar to mother-of-pearl.

229. I. Mother-of-pearl sometimes possesses a regular, and sometimes an irregular structure, and has a striking resemblance to the agate, in the immense variety of forms which it exhibits. Sometimes it is composed of parallel or concentric laminæ: sometimes the veins are inflected in various successions, and sometimes it exhibits the same appearances as those which constitute what is called the hammered agate.

230. The regularly formed mother-of-pearl is of a uniform whiteness, somewhat resembling the pearl itself, and, in day light, scarcely exhibiting any of the prismatic colors; and, unless it is mentioned, this was the kind which Dr. Brewster employed in these experiments.

231. Let AB , fig. 1, plate IV., be a plate of mother-of-pearl, not polished, but having its two surfaces ground perfectly, either upon a blue hone or upon a plate of glass with the powder of schistus, and let the light Rr of a candle be incident at any angle on the point r , this ray will be reflected according to the ordinary law, so that the angle RrC is equal to CrS , and the lines Rr , Cr , and Sr , in the same plane.

If the eye is now placed very close to the mother-of-pearl at B , so as to receive the reflected rays, it will perceive at S , in the direction rS , the common reflected image of the candle which will not be very bright, owing to the roughness of the reflecting surface. On the lower side of S' at the distance of some degrees there will also be seen a highly colored image of the candle at s , formed by rays reflected in the direction rs . In this spectrum the blue rays are nearest the common image, and the color is so great that it requires a prism of flint glass with a refracting angle of 65° to correct it, a large secondary spectrum being left, having the uncorrected green towards the vertex of the prism.

232. If the candle at R is kept steady, and the plate AB turned round r as a centre, so that the ray Rr may preserve the same angle of incidence, the colored ray rs will have a motion of rotation about rS , the common section AB of the plane rsS and the surface of the mother-of-pearl being invariable.

229. The line AB may be called the axis of extraordinary reflection; the extremity A , towards which the colored ray s is reflected, the primary pole of extraordinary reflection; srC the angle of extraordinary reflection; and srS the angle of aberration.

234. If the ray Rr is now reflected from the opposite surface of the mother-of-pearl, as represented in fig. 2, the same phenomena will be observed; but the colored ray rs will now be reflected towards B , and will be seen at s' above the common image S' , being formed by rays reflected in the direction rs . The extremity B therefore of the axis AB will be the primary pole of extraordinary reflection for the lower surface. Hence the two surfaces of mother-of-pearl have always their poles in opposite directions, unless in specimens where a change of structure takes place.

235. Let the plate AB be now brought into

the position in fig. 1, where the plane rsS coincides with the plane of ordinary reflection RrS , and let it be placed upon a goniometer so that we may ascertain by measurement the changes which take place by varying the angle of incidence RrC . It will then be found that the angle of aberration srS regularly increases with the angle of incidence. The variations which it undergoes are represented with tolerable accuracy in the following table; but, owing to the elongation and indistinctness of the colored image at large angles of incidence, the measures are not susceptible of great correctness. The first column contains the angle of incidence; the second the complement of that angle; the third the angle of aberration as determined by experiment; and the fourth, formed by adding the second and third columns, contains the complement of the angle of extraordinary reflection.

| Angle of Incidence. | Complements of the Angle of Incidence. | Observed Angle of Aberration. | Complement of the Angle of Extraordinary Reflection. | Calculated Angle of Aberration. |
|---------------------|--|-------------------------------|--|---------------------------------|
| 86 40 | 3 20 | 9 14 | 12 34 | 9 26 |
| 85 | 5 | 8 46 | 13 46 | 8 38 |
| 82 30 | 7 30 | 7 58 | 15 28 | 7 41 |
| 80 | 10 | 7 12 | 17 12 | 6 55 |
| 75 | 15 | 5 50 | 20 50 | 5 52 |
| 70 | 20 | 6 0 | 25 0 | 4 56 |
| 65 | 25 | 4 9 | 29 9 | 4 17 |
| 60 | 30 | 3 45 | 34 45 | 3 44 |
| 55 | 35 | 3 25 | 38 25 | 3 20 |
| 50 | 40 | 3 9 | 43 9 | 3 1 |
| 45 | 45 | 2 53 | 47 53 | 2 48 |
| 40 | 50 | 2 35 | 52 35 | 2 37 |
| 35 | 55 | 2 30 | 57 30 | 2 28 |
| 30 | 60 | 2 25 | 62 25 | 2 21 |
| 25 | 65 | 2 17 | 67 17 | 2 15 |
| 20 | 70 | 2 13 | 72 13 | 2 9 |
| 12 | 78 | 2 7 | 80 7 | 2 7 |
| $RrC = SrC$ | $A = SrB = RrA$ | $x = srS$ | $A + x = srB$ | s |

236. If we now compare the angles of aberration in the third column with the angles of extraordinary reflection in the fourth column, and make

$A = RrA = SrB$, the complement of the angle of incidence or ordinary reflection.

$x = srS$ the angle of aberration.

$A + x = srB$ the complement of the angle of extraordinary reflection, it will be found that

$\sin. s : \sin. s' = \sin. A' + x' : \sin. A + x$

That is, the sines of the angles of aberration are to one another inversely, as the sines of the complements of the angles of extraordinary reflection.

237. Assuming the numbers in columns third and fourth, Dr. Brewster has, upon this principle, computed those in the fifth, which are the calculated angles of aberration, and which agree very strikingly with the observed angles.

238. If we now turn round the mother-of-pearl 180° , so that the pole A may be brought into the position of B , the ray rs will be reflected towards the pole A , fig. 2, and the complement of the angle of extraordinary reflection will be equal to the difference between the angles of aberration and the complement of the angle of ordinary reflection. In this case we shall obtain the results given in the following table.

| Angle of Incidence. | Complement of the Angle of Incidence. | Observed Angle of Aberration. | Complement of the Angle of Extraordinary Reflection. | Calculated Angle of Aberration. |
|---------------------|---------------------------------------|-------------------------------|--|---------------------------------|
| 60 | 30 | 4 30 | 25 30 | 4 33 |
| 55 | 35 | 4 37 | 31 23 | 3 46 |
| 50 | 40 | 3 11 | 36 49 | 3 16 |
| 45 | 45 | 2 57 | 42 3 | 2 56 |
| 40 | 50 | 2 38 | 47 22 | 2 40 |
| 30 | 60 | 2 16 | 57 44 | 2 19 |
| 20 | 70 | 2 7 | 67 53 | 2 7 |
| | A | s | A—s | s |

239. By comparing the observed angles of aberration with the complements of the angles of extraordinary reflection, we shall find that

$$\sin. s : \sin. s' = \sin. A' - s' : \sin. A - s,$$

which indicates the same relation as formerly between the angles of aberration and extraordinary reflection. Upon this principle Dr. Brewster has computed the numbers in the fifth column which agree very well with the observed angles.

240. While the primary pole A is describing a semicircle round r till it reaches B, and another semicircle from B to A again; a point s in the extraordinary ray rs will describe a curve round S composed of two semi-ellipses having the same conjugate axis, but having their semi-transverse axes of different lengths. Thus, in fig. 3, if S be a point in the reflected ray rS , fig. 2, and Ss , SN , $S\epsilon$, SM , different values of the angles of aberration when the pole A is in the directions Ss , SN , &c.; then the point s will describe the semi-ellipse $M\epsilon N$, and the semi-ellipse $M\epsilon N$, which have their conjugate axis MN common, and their semi-transverse axes Ss , $S\epsilon$, of unequal lengths. The conjugate axis MN is a constant quantity, while Ss , $S\epsilon$, vary according to the law already mentioned. At different angles of incidence, therefore, the point s will describe other curves such as $M\epsilon' N\epsilon'$, which approach to a circle as the angle of incidence diminishes.

241. The angles of aberration vary in different pieces of mother-of-pearl, but there is no deviation from the laws which have just been explained.

242. On the outside of the extraordinary ray rs , fig. 1, a mass of colored light rp makes its appearance nearly at the same distance from the extraordinary image that the extraordinary image is from the common image: these three images are always in a straight line, but the angle of aberration of the mass of colored light varies according to a law different from that of the extraordinary ray. At great angles of incidence this mass of light is of a beautiful crimson color. At an angle of about 37° it becomes green, and at less angles of incidence it acquires a yellow hue, approaching to white, and becomes very luminous. These colors, which become more brilliant when the mother-of-pearl is polished, vary with the thickness of the plate.

243. The fracture of mother-of-pearl always reflects the extraordinary ray rs , as if the surface

of the fracture were parallel to the real surface; but, when the fracture is ground flat, no extraordinary reflection takes place.

244. When the extraordinary ray rs is reflected from another piece of mother-of-pearl, it experiences, as might have been expected, both an ordinary and an extraordinary reflection. In virtue of the ordinary reflection, an image is formed exactly like the extraordinary image; but in virtue of the extraordinary reflection, the highly colored image is sometimes rendered more highly colored, and at other times converted into a greenish white image, according as the second reflection conspires with, or opposes the first.

245. Hitherto we have attended to the phenomena only when the surface is rough and unpolished. When a slight degree of polish, however, is communicated to it, a new colored image appears on the opposite side of the common image formed by the rays rt , figs. 1 and 2. This new image resembles in every respect the other colored image, and follows the same laws; and, after a high degree of polish is induced upon the mother-of-pearl, it is almost as bright as the first colored image which has its brilliancy somewhat impaired by polishing. If the polish is removed by grinding, the second colored image vanishes, and the first resumes its former brilliancy. As this second image is reflected towards the pole A in fig. 1, and the pole B in fig. 2, they may be called the secondary poles of extraordinary reflection.

246. If we now examine the light transmitted by the mother-of-pearl, we shall perceive phenomena analogous to those which have been described. A colored image will appear on each side of the common image, having the same angles of aberration as those seen by reflection, and resembling them in every respect, the blue light being nearest the common image, and the red light farthest from it. These two images, however, are usually fainter than those seen by reflection, and, when the second extraordinary reflected image is extinguished by removing the polish, it is then the most brilliant when seen by transmission; and in general the image which is brightest by reflection is faintest by transmission.

247. In some irregularly formed pieces of mother-of-pearl which are ground very thin, and in which the axes of extraordinary reflection for the two surfaces are not coincident, four colored images are seen by transmission. Two of them

are produced by each surface, and the line which joins the two images formed by the same surface always coincides with its axis of extraordinary reflection. It is also deserving of notice that the transmitted extraordinary ray is bent towards the same pole as the extraordinary reflected ray to which it belongs.

248. Like all other bodies, mother-of-pearl polarises light by reflection, and the angle at which the quantity of polarised light is a maximum is about 59° . The two extraordinary images are also polarised at the same angle, but the mass of green and crimson light exhibits no marks of polarity. This substance has also the property of depolarising light in every position like horn, tortoise-shell, caoutchouc, and gum arabic.

249. II. The phenomena which have now been described must be admitted to be very singular and instructive; and it is probable that some philosophers would have contented themselves with ascribing them to reflections from directly inclined planes in the interior of the mother-of-pearl.

250. In order to measure the angles contained in the preceding tables, Dr. Brewster had occasion to fix the mother-of-pearl to a goniometer by a hard cement. Upon removing it from the cement the plate left a clean impression of its own surface, and he was surprised to observe that the cement had by this means received the property of producing the colors which were exhibited by the mother-of-pearl. This strange result he at first attributed to a thin film detached from the plate, but subsequent experiments soon convinced him that this was a mistake, and that the mother-of-pearl really communicated to the cement the properties which it possessed.

251. Dr. Brewster has also succeeded in imparting the same faculty of producing color to black and red wax, balsam of Tolu, gum arabic, gold leaf placed upon wax, tinfoil, the fusible metal composed of bismuth and mercury, and to lead by hard pressure, or by the blow of a hammer. When the impression is first made upon the fusible metal, the play of colors is singularly fine, but the action of the air corrodes the metal, and speedily destroys the configuration, as well as the polish of its surface. The same effect was produced when the metal was immersed in oil.

252. In order to show that in these cases no part of the mother-of-pearl is detached, he plunged the wax, after it had received the impression, into nitric acid, which had no effect either in destroying or diminishing the colorific property of the surface. In soft cements, made of bees' wax and rosin, the slightest degree of heat destroyed the superficial configuration by which the color is produced. In sealing-wax, gum arabic, and realgar, a much greater heat was requisite to remove the color; and in tinfoil and lead this could only be effected by the temperature at which they cease to become solid.

253. Let us now examine more minutely the phenomena which present themselves when the light is reflected from the surface of wax; and let us suppose that the impression upon the wax is made by the lower surface, when rough, of the mother-of-pearl, as represented in fig. 2, where

B is its primary and A its secondary pole. When the light Rr of a candle is reflected from the surface of wax A B, fig. 4, the extraordinary image, instead of being reflected towards the primary pole B as in fig. 2, is reflected from it, and A is the primary pole of the wax, whereas B was the primary pole of the mother-of-pearl. By polishing the mother-of-pearl, and taking a new impression from it, the wax will now reflect the other extraordinary image in the direction rt , and therefore B is the secondary pole of the wax. Hence it follows that mother-of-pearl communicates to wax and other bodies the optical properties of the surface opposite to that from which the impression is taken.

254. At different angles of incidence the two colored images formed by the wax follow the same laws as those produced by the mother-of-pearl; but the mass of green and crimson light never appears, and is therefore caused by some internal structure which cannot be communicated to other bodies. When an impression is taken from the fracture of mother-of-pearl, its faculty of producing color is also communicated.

255. In imparting to gum arabic and balsam of Tolu the superficial configuration of mother-of-pearl, we are enabled, on account of their transparency, to observe the changes induced upon the transmitted light. The extraordinary images formed by reflection were both visible, the primary one being remarkably brilliant, and the secondary one scarcely perceptible; but, when the light was transmitted through the gum, the primary image was nearly extinct, while the secondary one was unusually brilliant and highly colored, far surpassing in splendor those which are formed by transmission through the mother-of-pearl itself. When both the surfaces of gum arabic are impressed with mother-of-pearl, four images are seen. The colors seen by transmission are more brilliant in the gum than in the balsam, as the latter has the greatest reflective power; but the colored images produced by reflection do not seem to have suffered a greater dispersion when they are formed by the metals than when they are formed by cements.

256. When the impression is taken from a pearl, the wax receives a character similar to that which is possessed by the pearl. The image reflected from the surface of the pearl is enveloped in a quantity of unformed light, arising from a cause which will afterwards be explained; and the very same white nebulosity is reflected from the wax.

257. III. From a careful examination of the preceding facts, we must now be prepared to infer that all the peculiar phenomena of mother-of-pearl, as seen by reflection and transmission, are owing to a particular configuration of surface: that the communication of these properties to other bodies is the necessary consequence of the communication of its superficial structure; and that none of the light which is concerned in the production of these phenomena has penetrated the surface of the mother-of-pearl.

258. What this configuration of surface is, and in what manner it generates the colored images, are points of high interest, and of corresponding difficulty. The facts naturally lead us

to conjecture, that the extraordinary reflections are produced by faces either curved or rectilinear, slightly inclined to the general surface of the mother-of-pearl. In attempting to determine this point, Dr. Brewster anticipated no assistance from microscopical observations, as it was contrary to all our notions of the action of bodies upon light to imagine that a plate of mother-of-pearl reflecting an image as perfectly as the mirror of a telescope could exhibit to the human eye any superficial irregularities. These anticipations, however, were wholly erroneous. By the application of single microscopes with powers of 200, 300, and even 400, Dr. Brewster has discovered on almost every specimen of mother-of-pearl an elementary grooved surface, which no polishing can modify or remove. This structure resembles very closely the delicate texture of the skin at the top of an infant's finger; or the lines parallel to the coast upon a map, by which the engraver marks the limits of the sea and land. When the mother-of-pearl has a regular structure these grooves or lines are always parallel, but, when there is any irregularity of configuration, the grooves vary their direction, and are arranged in all possible forms like the veins of an agate, or like the lines upon the coast of a map, where are numerous inlets and islands to be represented.

259. Sometimes the spaces between the grooves are so wide that they can be seen with a magnifying power of six or eight times, and in one or two specimens he has observed them with the naked eye. At some parts of the surface the distance between the grooves is so small that he has counted more than 3000 in an inch; and in some pieces they can scarcely be detected with any magnifying power. When the space between the grooves is large a new groove often commences, and there is frequently a sudden change from a space with a series of distant grooves, to another space with a series of very close ones. Similar appearances were also seen in the structure of pearls. When the mother-of-pearl is scratched or indented, the bottom and the sides of the scratch are grooved exactly like the parts that are polished. The same grooved structure is likewise distinctly seen in wax, gum arabic, and the metals, after they have received the impression of the mother-of-pearl.

260. In every case the grooves are at right angles to the axis of extraordinary reflection, and hence in irregularly formed mother-of-pearl, where the grooves are often circular and have every possible direction, the axes of extraordinary reflection have also every possible direction, and the colored images appear irregularly scattered round the ordinary image. In the real pearl these colored images are crowded into a small space round the common image, on account of the spherical form of the pearl, and the various hues are thus blended into a white unformed light, which gives to this substance its high value as an ornament.

261. Having thus ascertained that the surface of mother-of-pearl is actually grooved, and different in this respect from all other bodies that have yet been examined, we must now seek, in

this peculiarity of structure, the cause of its optical properties. The facts which have been detailed will enable us to draw several important conclusions of a general nature, but they leave us in the dark respecting the immediate cause of the phenomena.

262. Let us now suppose that fig. 5 represents a section of a plate of mother-of-pearl, having $A a n m b c B$ for its upper surface, and $B' a' n' m' b' c' A'$ for its lower surface. Let OP be the line at which the attracting or refractive force ends, and where the repulsive or reflecting force begins, and let the reflecting force terminate at MN according to the Newtonian theory. We have already seen that when the surface AB of the mother-of-pearl is ground as flat as possible, and brought to a high polish, the light which is incident on the repulsive stratum $MNOP$ is reflected as in all other bodies, and affords a perfect image of the object from which it radiates. Hence it follows that the light which forms the extraordinary images has escaped reflection, and penetrated the attractive stratum OP ; and that its separation into colors and extraordinary reflection are produced by one or more causes residing between OP and the surface AB of the mother-of-pearl.

263. Let us first attend to the aberration of the extraordinary images. Since the real surface of AB is composed of faces inclined to the general surface, $A b c B$, we are led to suppose that the primary extraordinary image is reflected from the face m , while the secondary extraordinary image is reflected from the face n . Now this could only happen from two causes, either in consequence of the mother-of-pearl having a repulsive force different from the ordinary repulsive force which produces reflection: or from its possessing the power of reflecting light from its actual surface. That this extraordinary force is, in other respects, like the ordinary reflecting force, is manifest from a portion of the extraordinary pencil being transmitted, while the other portion suffers reflection. The existence of such a force being unquestionable, we have next to consider the form and position of the surfaces to which it belongs. The changes in the angle of aberration, at different angles of incidence, is a proof that the surfaces m, n , present different inclinations to the incident ray; and hence their form must be curvilinear, as represented by the dotted lines above m and n . If we suppose that the ray has been refracted before it experiences the extraordinary reflection, the angles of aberration still require that the faces have a curved form.

264. Taking the index of refraction $m = 1.653$, and making $A =$ angle of incidence; $a =$ angle of refraction, and consequently the new angle of incidence upon the faces m , or n ; $b =$ angle of extraordinary reflection, and $z =$ the inclination of the reflecting face m or n , then we shall have

$$\sin. a = \frac{\sin. A}{m} \text{ and } z = \frac{a + b}{2} - a = \frac{b - a}{2}$$

By calculating the value of z for different angles of incidence, we obtain the following results:—

Q

| Angles of incidence. | Inclination of the faces m or n . |
|------------------------|--|
| $86^{\circ} 41'$. . . | $20^{\circ} 8'$ |
| 70 . . . | 15 9 |
| 65 . . . | 13 48 |
| 60 . . . | 12 19 |
| 12 . . . | 1 20 |

But since the refraction cannot be completed when the ray reaches the surfaces m or n , having passed through only half the space of refracting activity, let us suppose the value of m corresponding to the partial refraction to be 1.300, and we shall have the following values of x :—

| Angles of incidence. | Inclination of the faces, m , n . |
|-------------------------|--|
| $86^{\circ} 41'$ | $13^{\circ} 34'$ |
| 70 | 9 16 |
| 65 | 1 19 |
| 60 | 7 14 |
| 12 | 0. 20 |

If the light, therefore, suffers either a total or a partial refraction, or if it suffers no refraction at all, the extraordinary reflection must be made from faces of variable curvature.

265. The most unaccountable circumstance, however, accompanying the extraordinary reflection, is the difference of effect produced upon the surfaces m and n by removing the polish. The surface m retains its power of reflecting the primary extraordinary image, notwithstanding the roughness which is thus superinduced, while the surface n loses the power of reflecting the secondary image, and acquires the faculty of transmitting the whole of the colored pencil which composes it. The force, therefore, which reflects the primary extraordinary image, would appear to be different from that which reflects the secondary extraordinary image, the latter being wholly dependent on the smoothness of the surface.

266. Hitherto we have avoided all consideration of the cause which separates the extraordinary pencils into their component colors, nor can we pretend to afford even a plausible conjecture respecting their origin. It is quite obvious that the separation into colors is produced before the pencil suffers extraordinary reflection, and, as the transmitted colors are not complementary to those which are reflected, it is equally manifest that the phenomenon has no connexion with the colors of thin plates. If the spectra were produced by the ordinary dispersive force of the body, then the dispersion ought to be least in gum arabic, greater in wax, and still greater in realgar and the metals, whereas in all these cases the quantity of color appears to be the same. The extraordinary spectra have no resemblance whatever to those which are the effect of inflexion; and, even if we could suppose that the light was inflected by the grooves, the cause would be inadequate to explain the continuance of the color, when the plane of incidence coincides with the direction of the grooves, and when there are manifestly no angles to bend the passing light.

267. But, whatever be the cause of the phenomena of mother-of-pearl, the facts themselves are

peculiarly instructive, and naturally lead us to the following conclusions :—

(1). Besides the ordinary forces which reflect and refract light, there reside without the surface of mother of pearl, and of all bodies to which its superficial configuration can be imparted, new forces which reflect light, and separate it into its component colors.

(2). The lines which bound the space of reflecting actively in all surfaces which possess this configuration, are straight, and are not parallel to the grooved structure of the surface. Hence a surface which appears, even to the unassisted eye, to be full of eminences and depressions, is capable of reflecting light with perfect accuracy.

(3). Since a particular configuration of surface, independent of chemical composition and crystalline structure, is capable of producing the most brilliant colors, may not the colors of all natural bodies be owing to the arrangement of their superficial particles, and may not the changes which these colors undergo by the action of light, heat, and atmospherical causes, arise from a corresponding change in the superficial structure? Dr. Brewster has endeavoured to communicate to wax the faculty of producing color possessed by Labrador spar, the metallic oxides, and various other bodies; but, though he has not succeeded in this attempt, it by no means follows that the color is not produced by the configuration of the surface. The structure may in these cases be so minute, that fluid wax cannot be forced into the grooves or depressions; and we have an approach to this delicacy of conformation in some specimens of mother-of-pearl, where the grooves cannot be seen by the most powerful microscopes.

(4). Since a particular structure of surface is always accompanied with a new repulsive force, residing nearer the body than the common repulsive force which produces ordinary reflection, may there not reside also, near the surface of all crystallised bodies, a new refractive force which produces double refraction? And is not this supposition countenanced by the fact that the extraordinary pencil formed by Iceland spar suffers the ordinary as well as the extraordinary refraction?

268. We may conclude this head with a few remarks on the crimson and green light, which always accompanies the primary colored image. This mass of light is never produced by the wax, and as it appears, even when the rays are incident upon the mother-of-pearl from a fluid of the same refractive power, it is evidently unconnected with the forms of surface. These masses of color appear to have the same origin as the colors of thin plates described by Newton. Even when the angle of incidence is the same, the crimson light appears at one thickness of the mother-of-pearl, and the green at a less thickness; and the transmitted light consists of colors complementary to those of the reflected light. We are, therefore, in this case, presented with phenomena almost exactly the same as those of thin plates, though produced by plates of mother-of-pearl of considerable thickness.

269. IV. Having seen, in the course of the preceding experiments, so many deviations from the ordinary laws of optics, Dr. Brewster sus-

pected that mother-of-pearl might exhibit similar anomalies in the polarisation of light. This conjecture was immediately confirmed by the discovery of a remarkable property, which forms the connecting link between the phenomena of polarisation, as effected by crystallised and uncrystallised bodies.

270. In all doubly refracting crystals, the opposite polarisation of the two images is invariably related to some axis or fixed line in the primitive form; while in uncrystallised bodies the polarisation is related to the planes of reflection and refraction, the reflected pencil being always polarised in an opposite manner to the refracting pencil. Thus, if $A B$, fig. 6, be a plate of glass, and $R r$ a ray incident upon it, at the polarising angle, the reflected ray $r S$ will be polarised in the same manner as one of the pencils formed by calcareous spar, and a small portion of the transmitted ray $r T$ will also be polarised, but in a manner opposite to $r S$ like the other pencil in calcareous spar: or, if the ray $R r$ is transmitted through a bundle of glass plates, the whole of the pencil $r T$ will be polarised in that manner.

271. If we now suppose $A B$ a single plate of mother-of-pearl about one-fortieth of an inch thick, and the angle of incidence $R r C$ about 60° , the reflected ray $r S$ will be polarised as in every other transparent body; but the transmitted ray $r T$ will be wholly polarised, and in the same manner as the reflected ray $r S$, while in every other transparent body that has been examined the ray $r T$ possesses an opposite kind of polarisation. If we now turn the plate $A B$ round its centre r , so as to preserve its inclination to the incident ray $R r$, no change whatever takes place, the transmitted ray still retaining its former polarity.

272. The angle of incidence $R r C$, at which the transmitted light $r T$ is wholly polarised, varies in the inverse ratio of the thickness of the plate $A B$, and the whole pencil is polarised at any angle greater than that angle. The relation between the angle of polarisation and the thickness of the plate remains to be determined; though he suspects it will be found that the tangents of the angles of incidence, at which the whole of the pencil is polarised, are inversely as the thickness of the plates.

273. The phenomena above described, Dr. Brewster has observed, in every piece of mother-of-pearl that he has tried; and as they are not affected when the incident pencil is refracted from balsam of Tolu, or any other cement, into the mother-of-pearl, they are obviously unconnected with its superficial configuration. Ivory does not produce the same effect upon light.

274. From these results, the following conclusions are clearly deducible:—

(1). That mother-of-pearl polarises light in a manner different from all crystallised bodies, the polarisation having no reference to any fixed line in the plate.

(2). That mother-of-pearl polarises light in a manner different from all uncrystallised bodies, the transmitted pencil being wholly polarised by a single plate, and in the same manner with the reflected pencil.

(3). That if mother-of-pearl polarises light in virtue of its laminated structure, the laminæ themselves must have the property of polarising light in a manner opposite to all other bodies.

275. Mr. J. F. W. Herschel, in repeating the above experiments of Dr. Brewster, observed some new phenomena exhibited by that singular body in its action on transmitted light, depending on the internal arrangement of its molecules, and at the same time connected with a peculiarity in its superficial appearance under the microscope, which seems to have eluded his notice. When a plate of mother-of-pearl, cut parallel to the natural surface of the shell, is reduced by grinding to a thickness between $\frac{1}{16}$ th and $\frac{1}{30}$ th of an inch, and highly polished on both sides (in which circumstances it is very transparent); if a distant candle be viewed through it, besides the pair of colored images described by Dr. Brewster, which have the same origin with those seen by reflection, there may be observed two large very brilliant and highly colored nebulous masses, one on each side of the candle, and equidistant from it, which may readily be distinguished from the preceding, by the following characters.

276. The first pair of colored images, originating in the transferable superficial structure of the pearl, are always similar in position and color, and complementary in brightness to those seen by extraordinary reflection. In consequence, nothing can be more capriciously irregular than their situation, brightness, and distance from the centre. On passing various parts of the plate, with a parallel motion between the pupil of the eye and the candle, they will be seen to shift their direction, expand, contract, or disappear altogether, with every change in the point examined. This is not the case with the pair of nebulous masses now under consideration, which undergo little or no variation in any of these particulars, through whatever portion of the plate they are viewed. The axis of nebulous dispersion then (or line joining the two nebulae) is parallel to itself, or nearly so, throughout the whole extent of the mother-of-pearl, and the energy of the cause producing it nearly or perfectly uniform.

277. These nebulous masses are usually about twice the distance of the colored images, described by Dr. Brewster from the centre; and, except the plate be very thin, are much larger and more conspicuous, and particularly distinguished from them by the equable gradation and softening of their colors, which are those of the prismatic spectrum, the red being outermost. Their angle of deviation, or distance from the central image, increases on inclining the plate in the plane passing through them; while their brightness rapidly diminishes, the former being a minimum, and the latter a maximum, at a perpendicular incidence. This angle, as well as the shape and color of the nebulae, is the same, or nearly so, in all the specimens Mr. Herschel has examined; nor does any marked variation in these particulars arise by a variation in the thickness of the plate, or by cutting it at any moderate angle with the natural surface; only, in the latter case, the maximum of their inten-

sity, and minimum of distance, takes place at such an angle of incidence that the ordinary ray traverses the substance in a direction perpendicular to the natural surface of the shell, which is also the direction of its greatest transparency. The minimum angle of deviation in the nebulous images appears to be

| | |
|-------------------------------------|---------|
| For the extreme red about | 10° 29' |
| For the mean rays | 6 59 |
| For the extreme violet. | 4 16 |

278. The extraordinary images seen by reflection, and their complementary pair by transmission, are completely obliterated by surrounding the mother-of-pearl with oil, or varnishing its surfaces. This, however, is so far from impairing the nebulous masses, that it heightens them a little, by perfecting the polish; and, should any doubt arise as to the identity of either pair, it may thus be immediately removed. From all these circumstances, compared with what Dr. Brewster has demonstrated respecting the former pair of images, we might reasonably conclude that the latter are entirely unconnected with any peculiarity in the superficial structure, and Mr. Herschel scarcely expected the application of the microscope to afford farther information, or lead to any result worth notice. On examining, however, many specimens of mother-of-pearl with a powerful double microscope, he found that this extraordinary body, in addition to the irregular grooved superficial structure, as described by Dr. Brewster, possesses another of great regularity and delicacy; but, like the former, resisting every attempt to impair it by polishing the surface. It may be seen to most advantage on a thin polished specimen, in which the first set of undulations vary a good deal in direction and coarseness. When we view such a plate successively with a series of increasing magnifiers, under a double microscope, a power of 123 will barely show, and one of 229 completely verify, the appearance of a minute system of rounded undulations, consisting as it were of fibres occasionally branching from each other, but never continued for any length. They are uniformly diffused over the whole surface, and, in their general direction, disposed in straight and exactly parallel lines, running from one end to the other. In consequence, they cross the first set of grooves at all angles, giving the whole surface much the appearance of a piece of twilled silk, or the larger waves of the sea intersected with minuter ripples.

279. The interval between these undulated appearances is nearly the same in all the specimens Mr. H. has examined. To ascertain it, twenty-five were counted in the space of an inch, in an image projected on a plane ten inches from the eye, while the diameter of a small wire, projected on the same plane with the same power, measured seven inches. The diameter of this wire taken by the spherometer being 0.0227 inches gives 0.000129, or $\frac{1}{7700}$ th of an inch for their mutual distance. To see them distinctly, a careful management of the illumination from below is necessary, and candle light must be used.

280. To demonstrate the connexion of these

undulations (which, whether real or apparent, we shall for brevity call the second set of grooves, denoting those observed by Dr. Brewster by the first set) with the nebulous masses above described, Mr. Herschel chose a plate in which the first set varied from the extreme of coarseness to that of delicacy, and were particularly irregular in their direction and curvature. In this he carefully marked, by small ink circles, numbered 1, 2, 3, 4, 5, 6, 7, which were then subjected to microscopic examination.

At No. 1 and 2 the two sets of grooves coincided in direction.

At No. 3 they made an angle rather more than 45° by the eye.

At No. 4 no grooves of the first set could be seen, but a power of 229 showed some obscure and very irregular traces of coarse elevations and depressions. With this power, however, the second set were seen precisely as in every other part of the surface, and in the same uniform direction.

281. At No. 5 the first set, as they approached this point, grew smaller and smaller, requiring powers of 26, 34, 43, 123, in succession to perceive them. With this latter power the second set just became visible; while with 229, both sets were seen crossing each other at right angles, with the most perfect regularity and distinctness, the former being about twice the breadth of the latter.

At No. 6 the direction of the first set varied a good deal, crossing the second from 45° to 60°.

At No. 7 they crossed at a small angle.

282. Mr. H. now detached the mother-of-pearl, and by passing a small sun-beam successively through each of the marked spots, and noticing the relative situations of the two pairs of colored images, it appeared that

At No. 1 and 2 the axes of dispersion in the first and second pair of colored images were coincident.

At No. 3 they made an angle of 45° with each other.

At No. 4 there were no colored images of the first pair whatever, while those of the second pair had precisely the same appearance and direction as in the other parts of the plate.

At No. 5 the axes of dispersion formed a right angle, the images of the first pair being very vivid, and separated by an unusually large interval.

At No. 6 the angles of dispersion formed an angle of 60°.

At No. 7 they were 17° inclined to each other.

283. In general, in different specimens, he could always predict, *a priori*, the situation of the nebulous masses of the second pair, by observing with the microscope the direction of the second set of grooves to which they are invariably at right angles; and the connexion between the two phenomena is thus clearly demonstrated. Yet this connexion is not, as in the case of the reflected colors, that of cause and effect. The nebulous masses, as we have seen, subsist when the grooves, if any, are obliterated by immersion in a fluid of equal refractive density. It is, therefore, in the internal structure of the pearl

that we must look for the common cause of both occurrences. When we examine a thin plate of this substance by polarised light, the phenomena of a crystal with two axes of double refraction are observed; the isochromatic lines being perfectly regular, and similarly disposed in all parts of the surface, and the colors, though not vivid and somewhat hazy, yet following in their proper order, and extending sometimes to six, seven, or eight, repetitions of the same color from either pole. If now, we notice the situation of the axes of double refraction, with respect to what has above been called the axis of nebulous dispersion, we shall find that the latter is in all cases at right angles to the plane in which the former lie, or to the optic meridian of the crystal.

284. The nebulous masses then, in all probability, originate in a regular laminated structure, perpendicular to the natural surface of the shell, and uniformly pervading all the coats of which it consists. The laminae, to agree with the above facts, must run parallel to each other, and in lines nearly straight along the whole surface, and the alternate ones at least must be regular crystals, having their optic meridians parallel to their own plane, and their optic axis (by which is meant the axis of symmetry in their spheroid of double refraction) perpendicular to the natural surface. The intermediate laminae, if composed of the same substance, must have their axes inclined to those of the former at some determinate angle. The grooved appearance above described may possibly arise from an actual difference in the resistance of these two sets of laminae to the action of the polishing particles, and therefore consist in a real difference of level; but this Mr. Herschel much doubts, from the simple fact, that he has never been able to transfer their impression to other transparent bodies, such as melted rosin, shell-lac, balsam of Tolu, &c., though in all cases the first set of grooves, however fine, has been transferred with the utmost fidelity, and the 7700th part of an inch, though a very minute quantity to our senses, appears to him enormously too wide to oppose the free introduction of a fluid under such circumstances. It is more probable that the appearance is a mere optical illusion, though a most complete one, arising from the difference of action of the contiguous surfaces on the light transmitted from below.

285. The regularity of structure here supposed is not at all incompatible with the irregular and arbitrary disposition of the grooves described by Dr. Brewster. These are the intersections of the plain artificial surface with the thin coats deposited in succession by the living animal, which, though laid symmetrically on each other, like the laminae of mica, have yet a slight degree of irregular curvature, and a small and varying inclination to the polished face. Their form and breadth is regulated by this curvature and inclination, like the level lines traced by a receding tide on a slightly inclined sea-beach, or those on the surface of a wooden board, where its concentric layers rise in succession at different angles to the surface. Indeed, the face of an ordinary deal plank, cut at some distance from the centre of the tree, however coarse the simile

may appear, when smoothed by planing and afterwards subjected to the friction of rough particles, as in a floor, is a lively and faithful representation of the surface of a polished plate of mother-of-pearl, in which the edges of the laminae reduced to the utmost tenuity, by the effect of their inclination to the general surface, are torn up in their direction of least resistance, by the action of the polishing particles. This is rendered perfectly evident by the microscopic examination of the surface in different stages of its progress, from the rough grinding to the most perfect polish, when the grooves, from an irregular, jagged, and deeply indented outline, will be seen to assume a greater and greater neatness of termination, till their curvature acquires that graceful and flowing character which ultimately distinguishes them.

286. The remarkable phenomena to which we now propose to direct the attention of our readers, while they possess all the interest which belongs to them as physical facts, have attached to them another kind of interest not less deserving of attention. To those who are in the practice of exercising a presumptuous confidence in their own judgments, and who trust in the indications of their senses as infallible guides, we would recommend the particular study of this class of deceptions. They will here find their judgments deluded, where every thing is favorable to the discovery of the truth; and even when they are aware of the source of the deception they will find themselves again brought under its dominion, and again released from it, by the operation of the most trivial circumstances which they are not able to discover, and the influence of which, if they do discover them, they are not able to appreciate. If all this takes place in matters of simple observation, where the senses of sight and of touch are allowed their undisturbed exercise, how much more liable must they be to error where their passions, their prejudices, or their feelings, concur in promoting the delusion, or even in any remote degree prepare the mind for its reception!

287. The class of deceptions to which we allude were, so far as we know, first noticed at one of the early meetings of the Royal Society of London, when a compound microscope, on a new construction, was exhibited. When the members were looking through it at a guinea, some of them saw the head upon the coin depressed, while others considered it to be raised, as it was in reality.

288. This deception was studied by Dr. Philip Frederick Gmelin, of Wirtemberg, who communicated the following observations upon it to the Royal Society in 1774:—

289. 'Being informed by a friend,' says he, 'that if a common seal was applied to the focus of a compound microscope, or optical tube, which has two or three convex or plano-convex lenses, that part which is cut the deepest in it would appear very convex, and so on the contrary; and that sometimes, but very seldom, it would appear in the same state as to the naked eye. I was desirous to make the observation myself, and found it constantly to happen as my friend told me. I thought the experiment worthy of being farther prosecuted; and accordingly on the 16th

of April, the morning not being very clear, but in a pretty light chamber, I viewed a watch hanging against a plain wall through the optical tube; the whole of it appeared concave, and fixed into the wall. I also observed some flies that were running about the wall, and they appeared in like manner. I also viewed a small globe of a thermometer filled with red spirit, and this also seemed hollow, and fixed within the frame. I found the same to happen with the round parts of garments of all colors, and with the brazen protuberances of a small cabinet; all which appeared concave, and deeply sunk into the cloth and wood. I also viewed a small stag's head cut in wood, and hanging horizontally on the wall; this also appeared concave, and fixed into the wall.

290. 'After this I observed a ball of Fahrenheit's thermometer, full of quicksilver: but it did not change its natural convexity, nor did the empty glass ball of the inverted thermometer hanging against the wall, though the lower ball of the same, filled with red spirit, and that also of Fahrenheit's filled with spirit, lost their convexity. Hence I presently concluded that white or shining uncolored bodies appear under the focus of this tube in the same manner as they appear to the naked eye; at the same time I must fairly acknowledge that an assisting friend has sometimes made observations directly opposite to mine in the same circumstances; nay, in a darker day, I myself have found my observations quite contrary to those I had made the day before. Hence, though the observations with the seal held constantly the same, I imagined there must be some particular circumstances hitherto undiscovered in which these objects appear thus perverted. I therefore endeavoured to discover some certain laws, according to which these perverted objects appeared when exposed to these foci, and some others according to which they constantly appeared as when they were exposed to the naked eye. After various experiments I partly obtained my end.

291. 'As often as I viewed any object rising upon a plane, of what color soever, provided it was neither white nor shining, with the eye and optical tube directly opposite to it, the elevated parts appeared depressed, and the depressed parts elevated, as it happened in the seal, as often as I held the tube perpendicularly, and brought it in such a manner that its whole surface almost covered the last glass of the tube; and in like manner it happened under the compound microscope. But as often as I viewed any of the other objects depending perpendicularly from a perpendicular plane in such a manner that the tube was supported in a horizontal situation directly opposite to it, the same always happened and the appearance was not altered when the object hung obliquely or even horizontally. I was mightily delighted with the observation of a tobacco-pipe, which had a porcelain bowl of a snowy whiteness, and a tube of horn almost black, and hung obliquely from a beam; the bowl preserved its natural convexity, and the tube was deeply sunk, and seemed to be almost immersed in the wall. I also observed that, when I placed the watch horizontally upon a horizontal plane, and then

looked on it perpendicularly, near the window, it no longer appeared so depressed, and surrounded with a shady ring; whence I began to suspect that all these fallacies were owing to shade, just as painters can elevate or depress a figure by making the ground lighter or deeper. Thus when the raised object was so placed between the windows that it must be illuminated on all sides, it did not change its convexity. But at last I discovered a method of making objects appear always with their natural convexity. If any object hung against a wall, or was contiguous to it in any situation whatsoever, I viewed sideways, in such a manner as not to oppose the tube directly against it, but below the eminence near the plain at some distance. By those means the protuberance of the instrument and other objects always appeared to me of their true natural convexity. With regard to the seal I held it in such a manner that the whole circumference was perpendicular, or rather a little inclined. Then I applied the lower side of the tube exactly to the upper margin of the disc of the seal, so that the tube formed an obtuse angle with the seal; then, carefully preserving the same situation, I very gently raised the tube from the rim of the seal upon its face; and then I always saw the seal with its true natural face. But why all these things happen exactly after the same manner I do not pretend to determine; nor why white or uncolored transparent bodies, rising in any manner above any plain, afford an exception from that rule of vision, and do not appear depressed when viewed after the method above-mentioned.'

292. In the year 1780 this subject occupied the attention of David Rittenhouse, president of the American Philosophical Society, who gave a correct explanation of the illusion, by referring it to the inversion of the shadow by the eye-tube. He employed in his observations an eye-piece, having two lenses placed at a distance greater than the sum of their focal distances; and by throwing a reflected light on the cavities observed, in a direction opposite to that of the light which came from his window, he was able to see them raised into elevations by looking through a tube without any lenses. Mr. Rittenhouse also observed that, by putting his finger into the cavity, the illusion ceased to take place.

293. Having thus given a brief detail of the experiments of Gmelin and Rittenhouse we shall proceed to explain more minutely the principles on which this illusion depends. It will afterwards be seen that inverting telescopes and microscopes are not necessary to the production of this illusion; but it may be best seen by viewing with the eye-piece of an achromatic telescope the engraving upon a seal when illuminated either by a candle or the window of an apartment. This eye-piece inverts the objects to which it is applied like the compound microscope, and the excavations or depressions of the seal are immediately raised up into elevations like a cameo, or a bas-relief. The cause of this illusion will be understood from fig. 7, where A represents a spherical cavity illuminated by a candle C. The shadow of the cavity will of course be on the left side S, and, therefore, if we view it through an inverting eye-piece or microscope, the cavity

will be seen as at A, fig. 8, with its shadow on the right hand S of the cavity. As the candle C remains where it was, the observer instantly concludes that what was formerly a cavity must now be a spherical elevation or segment of a sphere, as nothing but a raised body could have its shadow on the right hand S. If a second candle is now placed on the right hand side of A, so that it is between two candles, and is equally illuminated by both, the elevation will again sink into a cavity, as in fig. 9.

294. If the object A, in place of being a cavity, is actually the raised segment of a solid sphere, the same phenomena will be observed, the inverting eye-piece converting it into a cavity. These two experiments may be made most successfully with a seal, and an impression taken from it.

295. It cannot therefore be doubted that the optical illusion of the conversion of a cameo into an intaglio, and of an intaglio into a cameo, by an inverting eye-piece, is the result of an operation of our own minds, whereby we judge of the forms of bodies by the knowledge we have acquired of light and shadow. The greater our knowledge is of this subject, the more readily does the illusion seize upon us; while, if we are but imperfectly acquainted with the effects of light and shadow, the more difficult is it to be deceived. If the hollow is not polished, but ground, and the surface round and of uniform color and smoothness, almost every person, whether young or old, will be subject to the illusion; but, if the object is the raised impression of a seal upon wax, we have often found that, when viewed with the eye-piece, it still seemed raised to the three youngest of six persons, while the three eldest were subject to the deception. By such trifling and often unappreciable circumstances is our judgment affected, that the same person at one moment sees the convexity raised, and at another time depressed, though viewed as nearly as possible under the same circumstances. This remarkable effect no doubt arises from the introduction of some casual reflected lights which the slightest change of position will produce.

296. Having thus seen how our judgment concerning elevations and depressions is affected by our degree of knowledge of the effects of light and shade, and by unappreciable causes, we shall proceed to consider how our judgment is again deceived by the introduction of new substances.

297. Let the depression A, illuminated by one candle as in fig. 7, be converted into an elevation as in fig. 8, by the application of an inverting eye-piece; then if another candle C', fig. 9, is introduced so as to illuminate the depression A in the same manner, and with nearly the same intensity as C does, the elevation will fall down into a depression. The cause of this is obvious: the application of the inverting eye-piece produces no effect whatever, for both the sides of the cavity are symmetrically illuminated. In moving round the second candle C' from its position C', so as to stand beside C, it is curious to observe the progress of the deception by which the depression is again changed into an elevation.

298. If, when the depression A, fig. 10, is converted into an elevation, we introduce a small

unpolished opaque body M, and place it either beside the hollow or in it, so that the body M, and its shadow *m*, may be distinctly seen by the microscope, we shall have the appearance shown in fig. 11, the elevation having sunk into a depression. This correction of the depression arises from the introduction of a new illusion, namely, that which arises from the shadow *m*; for it is evident that, as the body M appears to project its shadow in the direction M *m*, the luminous body must be supposed to be on the same side D; and the evidence that this is the case is more powerful than our knowledge that the candle is actually at C, because it co-exists along with our perception of the depression A, whereas our knowledge of the situation of the candle is an act of recollection.

299. This correction of the delusion may be effected in another manner, which is perhaps more complete. If, in place of the unpolished body, we use a pin with a highly polished head, as shown at M, fig. 12, and then apply the inverting eye-piece, we shall have the effect shown in fig. 13, the cavity A appearing depressed. The image *s* of the candle C, being seen by reflection in the polished head of the pin M, is seen by the application of the eye-piece at *s*, on the right hand side of M in fig. 13, so that we immediately conceive, in opposition to our previous knowledge, that the candle must be at D; and hence the elevation falls into a depression the moment the pin head is pushed up into the field of view. The shadow M *m* has also its influence in the present case.

300. The next case in which this illusion is dispelled is when the sense of touch corrects the deduction formed through the medium of sight. Let the cavity A be raised into an elevation by the inverting eye-piece, as in fig. 8. Then if the cavity is sufficiently deep, and if we place the point of our finger in the cavity, the evidence which this gives us of its being a depression is superior to the evidence of its being a cavity arising from the inversion of the shadow; the apparent elevation will of course sink into a depression; but the moment the finger is withdrawn it will again rise into an elevation. If the cavity is a long groove, the part not touched by the finger will appear elevated, while the part touched by it will appear depressed.

301. Having thus considered some of the principal phenomena arising from the inversion of the object, we shall now proceed to explain some analogous facts which are owing to the semi-transparency of the body. If MN, fig. 14, is a plate of mother-of-pearl, and A a cavity ground or turned in it; then if this cavity is illuminated by a candle C, or by a window at C, in place of their being a shadow at the side *s*, as there would have been had the body been opaque, there is a quantity of refracted light seen along the whole side *s* next the candle. The consequence of this is that the cavity appears as an elevation when seen only by the naked eye, as it is only an elevated surface that could have the side *s* illuminated. The fact which we have now stated is a very important one, in so far as it may affect the labors of the sculptor. In some kinds of marble the transparency is so great that

the depressions and elevations in the human face cannot be represented by it with any degree of accuracy; and consequently transparent marble ought never to be used for works of any importance.

302. Illusions arising from the same cause may be observed even when the surface of the object is perfectly plain and smooth. If MN , fig. 15, is the surface of a mahogany table, MN a section of it, and abc a section of a knot in the wood, then it often happens, from the transparency of the thin edge at a , next the candle, that that side is illuminated while the opposite side at c is dark, the eye being placed in the plane of the section abc . The consequence of this is that the spot abc appears to be a hollow in the table.

303. Hence arises the appearance in certain plates of agate, which has obtained for it the name of hammered agate. The surface on which these cavities appears is a section of small spherical aggregations of siliceous matter like abc in fig. 15, which present exactly the same phenomenon, arising from the same cause as the knots in mahogany and other woods.

304. The very same phenomenon is, as we have already stated, often seen in mother-of-pearl. Indeed it is so common in this substance that it is almost impossible to find a mother-of-pearl counter which seems to have its surface flat, although they are perfectly so when examined by the touch. Owing to the refraction of the light by the different growths of the shell lying in different planes, the flattest surface seems to be unequal and undulating.

305. Dr. Brewster states that one of the finest deceptions which he ever met with, arising from the disposition of light and shadow, presented itself on viewing through a telescope the surface of a growing field of corn, illuminated by the sun when near the horizon. This field, on Sir Walter Scott's estate at Abbotsford, was about two miles distant, and was divided into furrows, which were directed to the eye of the observer, as shown in fig. 16, where AB , CD , EF , represent the furrows. These furrows are of course depressed, and the growing corn rises gradually from two adjacent ones towards the middle mn , op , so that the surfaces $A m C$, $C o E$, were convex. The drills of corn on the highest summits mn , op , caught the rays of the setting sun, which shone upon them very obliquely in the direction Ss , and illuminated their summits laterally, while the furrows AB , CD , EF , were in shadow. The consequence of this disposition of the light and shade was, that the whole field seemed to be trenched, and the corn to be growing in the trenches as well as upon the elevated beds between them. The half furrow $A B n m$, being shaded on its edge AB , and illuminated on its edge mn , became the elevated part of the trenched ground, while the other half $m n C D$ appeared the sunk part, in consequence of the side mn being illuminated, and its other side $C D$ in shade. At a certain period of the day this deception did not take place, and it was dispelled the moment the sun had set. The telescope had no effect whatever in producing it, as it showed objects erect.

306. An illusion of an analogous nature Dr. Brewster once observed when looking at the abbey church of Paisley, where the clustered columns of a Gothic pillar all sunk into hollow flutings. The cause of this deception was not discovered, but it must have arisen from some mistaken notion respecting the direction in which the object was illuminated.

307. The last species of illusion of this nature, and perhaps the most remarkable of all of them, may be produced by a continued effort of the mind to deceive itself. If we take one of the intaglio moulds used for making bas-reliefs, and direct the eye steadily to it without noticing surrounding objects, we may entice ourselves into the belief that the intaglio is actually a bas-relief. It is difficult at first to produce the deception, but a little practice never fails to accomplish it. Dr. Brewster states that he has succeeded in carrying this deception so far as to be able, by the eye alone, to raise a complete hollow mask of the human face into a projecting head. In order to do this we must exclude the vision of other objects: and also the margin or thickness of the cast.

308. The phenomena arising from *atmospheric refraction* may be best understood by an examination of the apparent alteration in the colors of the heavens.

309. If the light of the setting-sun, by passing through a long tract of air, be divested of a portion of its rays, the remainder, which is transmitted, will illuminate the western clouds with an orange color, and as the sun sets more and more, a great number are reflected, while the clouds grow more deeply red, till at length the entire disappearance of the sun leaves them of a leaden hue.

310. When a direct spectrum is thrown on colors darker than itself, it mixes with them; as the yellow spectrum of the setting-sun, thrown on the green grass, becomes a greener yellow. But, when a direct spectrum is thrown on colors brighter than itself, it becomes instantly changed into the reverse spectrum, which mixes with those brighter colors. So the yellow spectrum of the setting sun thrown on the luminous sky becomes blue, and changes with the color or brightness of the clouds on which it appears. But the reverse spectrum mixes with every kind of color on which it is thrown, whether brighter than itself or not: thus, the reverse spectrum obtained by viewing a piece of yellow silk, when thrown on white paper, was a lucid blue-green; when thrown on black Turkey leather became a deep violet: and the spectrum of blue silk, thrown on white paper, was a light yellow; on black silk was an obscure orange; and the blue spectrum obtained from orange-colored silk, thrown on yellow, became a green.

311. Of the natural phenomena produced occasionally by the separation of the primary colors the rainbow is one of the most beautiful. This meteor, which in poetical language is called the iris, never makes its appearance except when the spectator is situated between the sun and a shower of rain; and that this conclusion is just any one may satisfy himself by the following experiment:—Fill a hollow glass globe with water, and suspend it in the sun, in such a

Fig. 2.

Fig. 7.

Fig. 13.

Fig. 11.

Fig. 6.

Fig. 10.

Fig. 8.

Fig. 10.

Fig. 12.

Fig. 9.

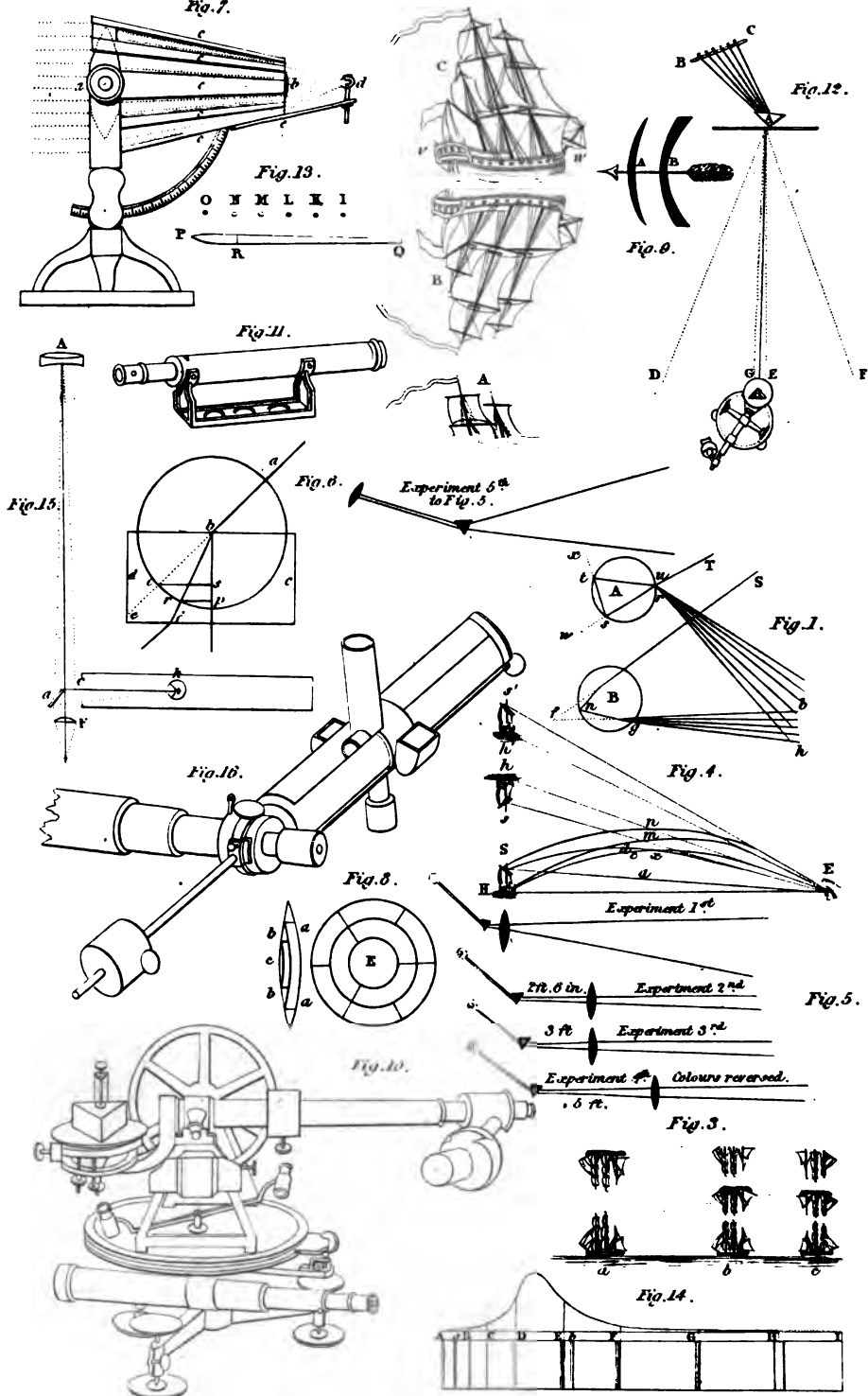
Fig. 1.

Fig. 4.

Fig. 5.

Fig. 3.

Fig. 14.



manner that it may be raised or lowered at pleasure; at a certain height above the eye of the spectator, who looks at it with his back to the sun, the globe will appear to be red; let it then be slowly lowered, and it will appear to be orange, and afterwards, in succession, as it descends, it will appear yellow, green, blue, indigo, and violet. Hence the same drop of rain, which must be considered as a little globe, supplies all the seven colors to the eye. There are sometimes two rainbows seen at the same time, one within the other, and, what may seem remarkable, the order of the colors of the exterior bow is the reverse of that of the interior one. When two bows are seen, the exterior one is comparatively faint, and it is, therefore, sometimes called the false or secondary bow; while the greater distinctness of the interior one has obtained for it the appellation of the primary bow. The rainbow was one of those phenomena which astonished and perplexed the ancients; and, after many absurd and unsuccessful conjectures, their best philosophers, Pliny and Plutarch, relinquished the enquiry as one which was above the reach of human investigation. In the year 1611 Antonio de Dominis made a considerable advance, however, towards the theory of the rainbow, by suspending a glass globe in the sun's light, when he found that, while he stood with his back to the sun, the colors of the rainbow were reflected to his eye in succession by the globe, as it was moved higher or lower. He was, however, unable to account for the production of the different colors, as the experiments with the prism had not yet been made, and it was reserved for Newton to perfect the discovery.

312. To trace the progress of a ray of light through a drop of rain in each of these bows, will explain the cause of their differing in brightness. In the true or primary bow, the rays of light arrive at the spectator's eye, after two refractions and one reflection.

313. Thus, let *A*, in plate V. fig. 1, be a drop of rain, and *S* a ray from the sun falling on the upper part of the drop. It will suffer a refraction, and, instead of going forward in a right line, it will be bent to *n*; at *n* part of it will emerge, but the remainder will be reflected to *g*; at *g* it will be again refracted on passing into the air towards the eye at *h*; being thus twice refracted and once reflected, the ray is separated into its primitive colors; the red part, which is least thrown out of its course, makes an angle, at its emergence, with the incident solar ray of $40^{\circ} 2'$, as *Sfh*; and the violet, being the most easily thrown out of its course, makes with the solar light an angle of $40^{\circ} 17'$. The different colors, therefore, at the distance of the spectator, are considerably separated, and affect the eye in succession with the seven colors; but the succession is so quick, and so many drops fall through the same circuit in the same time, that the mind loses the idea of succession, and the bow seems permanent as long as the shower continues in a proper direction for the eye.

314. The exterior or secondary bow is formed by two reflections and two refractions. Let *B* represent one of the drops of rain forming this bow; a ray, *T*, from the sun, falling upon it at

r, is refracted, and falls upon the back of the drop at *s*; from the transparency of the drop a portion of it passes through towards *w*, but the remainder of it is reflected towards *t*; here again, for the same reason as before, part of it emerges from the drop, in the direction *x*, but the portion still left is reflected to *u*, where it is refracted towards the spectator, with the red rays uppermost. The great quantity of light lost at each reflection is the cause of the indistinctness of this bow, and therefore we cannot be surprised that we rarely, if ever, see bows formed by a still greater number of reflections within the drops; for, though they may exist, they are too faint to be seen. The secondary bow cannot be seen when the elevation of the sun is above $54^{\circ} 7'$, and it is broader than the interior bow, because the rays are more dispersed before they reach the eye.

315. The marine or sea bow is a phenomenon sometimes observed in a much agitated sea; when the wind, sweeping part of the tops of the waves, carries them aloft, so that the sun's rays falling upon them, are refracted, &c., as in a common shower, and paint the colors of the bow.

316. Rohault mentions colored bows on the grass, formed by the refraction of the sun's rays in the morning dew. Dr. Langwith, indeed, once saw a bow lying on the ground, the colors of which were almost as lively as those of the common rainbow. It was extended several hundred yards, and was not round, but oblong, being as he conceived the portion of an hyperbola. The colors took up less space, and were much more lively in those parts of the bow which were near him than in those which were at a distance.

317. We may now notice a peculiar perspective appearance of aerial light and shade. It occurred on the evening of August 19th, 1826; and was observed from the undercliff at the back of the Isle of Wight, just above Puckaster Cove. The sky was clear; the sun had just set to those who were standing where the appearance was observed; when several enormous rays of light and shade were remarked towards the east, north-east, and south-east, all radiating in straight lines from a spot rather south of east, and just upon the horizon. They were ten or twelve in number, did not join at the place whence they appeared to originate, but seemed to emerge from an obscure portion of surface of a convex form, 8° or 9° in horizontal extent, and about the third of that in height. The rays extended from 30° to 40° on the right and left from the centre, but were of less extent as they became more vertical. They diminished gradually in intensity at the extremities, until they could be traced no farther. The appearance slowly faded away, some of the rays disappearing before others, but was observed upon the whole for about half an hour.

318. At first the phenomenon seemed inexplicable, but after a little consideration was referred (and as it appeared from after observations correctly) to an effect of aerial perspective. The rays which seemed to originate from a common centre on the east were really only the intervals between long shadows caused by the

occurrence of clouds far to the west, and were in fact passing to the place whence they seemed to originate; and the circumstances of the case seem to have been as follow:—the atmosphere contained a slight haze, which allowed the sun's beams to pass forward with but little interruption, but was yet in sufficient quantity to reflect a considerable portion of light to the eye. The sun was just setting; the clouds very far to the west, and out of sight from the place where the observer stood, stopped the light wherever they interfered, and cast immense horizontal, or nearly horizontal, shadows along the sky, parallel to each other, and over the head of the observer. The difference between these shadows and the intervening illuminated parts could not be observed over head, or on the right or left hand, i. e. perpendicular to their direction, because of the want of sufficient depth, as it were, in the parts thus circumstanced, to make them visible; but, as they receded from the observer in the direction from the sun, they became fore-shortened, and then from the greater depth of mass, and consequently greater number of particles looked at, became visible. This is at least one reason why they were so visible towards the east; but another is the probable existence of more haze in that direction than towards the west, or to the right or left of the observer's situation: the rays could not be seen between the sun and the observer, though the sun was out of sight, and consequently the general light, it may be supposed, not too great; which seems to imply that less haze existed in that direction; and its presence was fully proved towards the east by the dull red color which the moon assumed upon rising a short time after the appearance had ceased. The convergence of the rays to one spot, and that opposite the sun, was merely an effect of perspective, and requires no explanation here.

319. Although the appearance on this evening was exceedingly beautiful and rare, and the more striking from the absence, to the observer, of the sun or clouds, and the complete insulation of the phenomenon, yet by close observation, upon other evenings, it was found that partial effects of the same kind were very common; and, from the manner in which these could be observed, the explanation above given fully confirmed. On several evenings after, when observing the sun set from the neighbouring hill of St. Catherine, it was found that if the atmosphere was generally clear, but with compact and distinctly-formed clouds floating in it, the effect was produced. The usual appearance of rays at sunset, diverging amongst the clouds in the west, from the sun, is well known; but, even when these were not visible, upon looking to the eastern half of the hemisphere, and especially to the north or south of east towards the horizon, it was rarely that some clouds could not be distinguished, with long shadowy projections behind them, always converging to the spot opposite to the sun. Frequently, clouds could be selected moving more immediately in the neighbourhood of the observer: of those which passed overhead the shadows could not be observed close to the clouds; but, carrying the eye onwards

towards the east, the same shadows became visible, when considerably fore-shortened, and could be observed moving on and changing with the clouds themselves. All these phenomena, with their variations, were easily referrible to their causes, and may be observed at almost any sun-set in fine weather; but the effect of the first evening, so similar in kind, though so different in appearance, was not again remarked. It is with a view of guarding persons who may observe the same effect, against any mistake as to its origin, that the appearance, with its nature, has been thus particularly described.

320. The elevation of coasts, ships, and mountains, above their usual level, when seen in the distant horizon, has been long known and described under the name of *Looming*. The name of mirage has been applied by the French to the same class of phenomena; and the appellation of Fata Morgana has been given by the Italians to the singular appearances of the same kind which have been repeatedly seen in the straits of Messina. See FATA MORGANA.

321. The phenomena of the mirage are most frequently seen in the case of ships when they are just beginning to appear above the visible horizon. Mr. Huddart, Dr. Vince, and captain Scoresby, have described various appearances of this kind, of which the following are the most interesting:—

322. On the 1st of August, 1798, Dr. Vince observed at Ramsgate a ship which appeared as at A, fig. 2, the top mast being the only part of it that was seen above the horizon. An inverted image of it was seen at B immediately above the real ship A, and an erect image at C, both of them being complete and well defined. The sea was distinctly seen between them as at *vw*. As the ship rose to the horizon the image C gradually disappeared, and while this was going on the image B descended, but the mainmast of B did not meet the mainmast of A. The two images BC were perfectly visible when the whole ship was actually below the horizon.

323. While navigating the Greenland Sea on the 28th of June, 1820, captain Scoresby observed about eighteen or nineteen sail of ships at the distance of from ten to fifteen miles. He saw them from the mast head, beginning to change their form. One was drawn out, or elongated, in a vertical plane; another was contracted in the same direction; one had an inverted image immediately above it as at *a* fig. 3, and two at *b* and *c*, had two distinct inverted images in the air: along with these images there appeared images of the ice, as at *b* and *c*, in two strata, the highest of which had an altitude of about 15'.

324. In a later voyage, performed in 1822, captain Scoresby was able to recognise his father's ship, when below the horizon, from the inverted image of it which appeared in the air. 'It was,' says he, 'so well defined, that I could distinguish by a telescope every sail, the general 'rig of the ship,' and its particular character; insomuch that I confidently pronounced it to be my father's ship, the *Fame*, which it afterwards proved to be; though, in comparing notes with my father, I found that our relative position at

the time gave our distance from one another very nearly thirty miles, being about seventeen miles beyond the horizon, and some leagues beyond the limit of direct vision. I was so struck by the peculiarity of the circumstance that I mentioned it to the officer of the watch, stating my full conviction that the *Fame* was then cruising in the neighbouring inlet.'

325. One of the most curious phenomena of this kind was seen by Dr. Vince on the 6th of August, 1806, at 7 P.M. To an observer at Ramsgate the tops of the four turrets of Dover castle are usually seen over a hill between Ramsgate and Dover. Dr. Vince, however, when at Ramsgate saw the whole of Dover castle as if it had been brought over and placed on the Ramsgate side of the hill. The image of the castle was so very strong and well defined, that the hill itself did not appear through the image.

326. In the sandy plains of Egypt the mirage is seen to great advantage. These plains are often interrupted by small eminences, upon which the inhabitants have built their villages, in order to escape the inundations of the Nile. In the morning and evening objects are seen in their natural form and position, but, when the surface of the sandy ground is heated by the sun, the land seems terminated at a particular distance by a general inundation; the villages which are beyond it appear like so many islands in a great lake, and between each village an inverted image of it is seen.

327. Our limits will not permit us to give any farther examples of these curious phenomena. We shall therefore attempt to give a popular explanation of their cause.

328. Let *SH*, fig. 4, be a ship in the horizon, and visible to the eye at *E*, by rays *SE*, *HE*, proceeding in straight lines to *E*, through a tract of the atmosphere in its usual state. If we suppose, what is known to be sometimes the case, that the refractive power of the atmosphere, or air, above the line *SAE* varies, so as to be less at *c* than at *a*, then rays *Sc*, *Hc*, proceeding upwards from the ship, and that never could in the ordinary state of the air reach the eye at *E*, will be refracted into curve lines *Hc*, *Sc*; and, if the variation of refractive power is such that these last rays cross each other at *x*, then the ray *Sc*, in place of being the uppermost, will now be the undermost, and consequently will enter the eye as if it came from the lower end of the object.

329. If we now draw lines *Es*, *Ek*, tangents to these curve lines at *E*, these lines will be the direction in which the ship will be seen by the rays *Hc*, *Sc*, and the observer at *E* will see an inverted image *sk* of the ship *SH* considerably elevated above the horizon. The refractive power of the air still continuing to diminish, other rays, *Hm*, *En*, that never could reach the eye at *E* in the ordinary state of the atmosphere, may likewise be bent into curves which will not cross each other before they reach the eye at *E*. In this case the tangent *Es* to the upper curve *SnE* will be uppermost, and the tangent *Ek* to the lower curve *SmE* lowermost, so that the observer at *E* will see an erect image *sk* of the ship above the inverted image. It is possible

that a third and even a fourth image may be seen.

330. If the variation of refractive power takes place only in the tract of air through which the rays *Hc*, *Sc*, pass, then there may only be an inverted image; and if it takes place only in the tract through which *Sm*, *Sn*, pass, there may only be an erect image. It is also obvious, that if the variation of refractive power commences at the line joining the eye and the horizon, the ordinary image *SH* will not be seen; and, in like manner, it is clear that the inverted and erect images *sk*, *sk'*, may be seen even if the real ship *SH* is below the visible horizon.

331. In the case of Dover Castle, the rays from the top and bottom of the castle passed above the hill in curve lines, and the top of the hill was seen by the observer at Ramsgate, by means of a curved ray which reached the eye between the rays of the top and bottom of the castle.

332. That the phenomena of the mirage are produced by such variations in the refractive power of the atmosphere as we have mentioned may be proved by actual experiment. All the phenomena may be represented artificially to the eye, and we may even venture to predict new phenomena which have not yet been witnessed. If the variation of the refractive power of the air takes place in a horizontal line perpendicular to the line of vision, that is, from right to left, then we may have a lateral mirage, that is, an image of a ship may be seen on the right or left hand of the real ship, or on both, if the variation of refractive power is the same on each side of the line of vision. If there should happen at the same time both a vertical and a lateral variation of refractive power in the air, and if the variation should be such as to expand or elongate the object in both directions, then the object would be magnified as if seen through a telescope, and might be seen and recognised at a distance at which it would not otherwise have been visible. If the refractive power, on the contrary, varied, so as to contract the object in both directions, the image of it would be diminished as if seen through a concave lens.

333. In order to represent artificially the effects of the mirage, Dr. Wollaston views an object through a stratum of spirit of wine lying above water, or a stratum of water laid above one of syrup: These substances, by their gradual incorporation, produce a refractive power diminishing from the spirit of wine to the water, or from the syrup to the water; so that by looking through the mixed, or the intermediate stratum at a word or object held behind the bottle which contains the fluids, an inverted image will be seen. The same effect Dr. Wollaston has shown may be produced by looking along the side of a red-hot poker at a word or object ten or twelve feet distant. At a distance less than three-eighths of an inch from the line of the poker, an inverted image was seen, and within and without that an erect image.

334. The method employed by Dr. Brewster to illustrate these phenomena consists in holding a heated iron above a mass of water bounded by parallel plates of glass; as the heat descends

slowly through the fluid, we have a regular variation of density which gradually diminishes from the bottom to the surface. If we now withdraw the heated iron, and put a cold body in its place, or even allow the air to act alone, the superficial stratum of water will give out its heat, so as to produce a decrease of density from the surface to a certain depth below it. Through the medium thus constituted the phenomena of the mirage may be seen in the finest manner.

335. We have no doubt that some of the facts ascribed in the Western Highlands of Scotland to second sight have been owing to the unusual refraction of the atmosphere, and that the same cause will explain some of those wonders which sceptics discredit, and which superstitious minds attribute to supernatural causes. The beacon keeper of the Isle of France, who saw ships in the air before they rose above the visible horizon, may now recover his good character in the eyes of the former, while the latter may cease to regard him as a magician.

336. Very beautiful effects resulting from the decomposition of white light are visible on the surface of the feathers of birds; and, as we have stated in a previous section, are also exhibited on the surface of mother-of-pearl. Dr. Brewster, while pursuing a series of experimental investigations on this subject, found, by the aid of the microscope, that they arose from grooves in the striated surfaces; that they were produced when the flat surface was unpolished, and that they could be communicated to wax, gum-arabic, tin-foil, the fusible metal, and even to lead, by hard pressure or the blow of a hammer. He determined also that the mottled colors upon all bodies with an imperfect polish, and the scratches or grooves upon polished metals, could be communicated to wax and other substances. The same structure which gives these communicable colors he succeeded in producing artificially on the surface of calves-foot jelly, that had been boiled a considerable time; and he discovered, with a powerful microscope, the same minute grooves which exist in mother-of-pearl, and they were so near one another that some thousands of them must have been contained in a single inch. These grooves were completely visible to the unassisted eye, but they gave in a very distinct manner the colors of mother-of-pearl.

337. Mr. Barton, of the mint, has succeeded in ornamenting steel and other articles, with the colors of striated surfaces, and of applying this principle to practical purposes.

338. In applying the principle of striated colors to ornament steel, the effect, or pattern, is produced upon the polished surface by the point of the diamond, so that either the whole or a part of the surface is covered with lines or grooves, whose distance may vary from the 1000th to the 10,000th of an inch. When these lines are most distant the prismatic images of the candle, or any luminous body, seen by reflection from the polished surface, are nearest one another, and the common colorless image; and, when the lines are least distant, the colored images are farthest from one another, and the colors are most vivid.

339. In daylight the colors produced by these

minute grooves are scarcely distinguishable, unless at the boundary between a dark and a luminous object. In sharp lights, however, and particularly in that of the sun, the colors shine with extraordinary brilliancy, and the beautiful tints which accompany every luminous image can only be equalled by their matchless exhibition on the reflections of the diamond.

340. The colors transmitted by plates of glass containing a film of air or water are well worth an attentive examination. The plates of reflection or transmission of the several colors in a series are so near each other that the colors dilute each other by mixture, whence the number of series in the open daylight seldom exceeds seven or eight: but if the system be viewed through a prism, by which means the rings of various colors are separated, according to their refrangibilities, they may be seen on that side towards which the refraction is made, so numerous that it is impossible to count them. Or if, in a dark chamber, the sun's light be separated into its original rays by a prism, and a ray of one uncompound color be received upon two glasses, the number of circles will become very numerous. In this experiment it is also seen that, in any series, the circles formed by the less refrangible rays exceed in magnitude those which are formed by the more refrangible rays, and consequently that, in any series, the more refrangible rays are reflected at less thicknesses than those which are less refrangible. If the light be incident obliquely, the rings of colors dilate and enlarge themselves; whence it follows that the thickness required to reflect the colors of any series is different in different obliquities.

341. When the solar rays are passed through a convex lens, or reflected from a concave, a very intense heat is produced by the concentration of the rays. Count Rumford has shown that when the rays of the sun are made to pass through a certain aperture, and fall upon any substance to be heated, while the same area of light is made to pass through a lens, in the focus of which the same quantity of matter is to be heated, they become heated in the same time to the same degree. Nothing is better known, in short, than that the rays of the sun are capable of exciting sensible heat. Newton, and the philosophers of his age, accounted for heat by the motion excited in the parts of the body by the agitating power of the absorbed light. Melville supposed that the heat was expelled from the terrestrial matter by the light. At present it is generally admitted, on the strength of some valuable experiments to which we have already alluded, that the rays of light and caloric are separately emitted from the sun, the luminous rays producing light, and the caloric, heat.

342. It was originally remarked by Newton, and the fact has since been confirmed by the experiments of Dr. Herschel, that the different-colored rays have not the same illuminating power. The violet rays appear to have the least luminous effect: the indigo more; and the effect increases in the order of the colors, the green being very great; between the green and yellow the greatest of all; the yellow the same as the green; but the red less than the yellow.

343. Sir William Herschel introduced a beam of light into a dark room, which was decomposed by a prism, and then exposed a very sensible thermometer to all the rays in succession, and observed the heights to which it rose in a given time. He thus determined that the heating power of the red, to that of the green rays, was two and three-quarters to one; and three and a half to one in red to violet.

344. On repeating these experiments he found that the greatest quantity of calorific rays were even beyond the colored spectrum at about half an inch from the commencement of the red rays. At a greater distance from this point it began to diminish, but was very perceptible even at the distance of an inch and a half.

345. It will appear, from what has been stated, that these calorific rays are less refrangible than the rays of light; hence the calorific focus will fall beyond that of the luminous. Dr. Herschel made an experiment to verify this inference, but did not come at any thing conclusive. He afterwards made experiments to collect these invisible calorific rays, and caused them to act independently of the light; by which he concludes that they are sufficient to account for all the effects produced by the solar rays in exciting heat; that they are capable of passing through glass, and of being refracted and reflected, after they have been finally detached from the solar beam.

346. Dr. Morichini appears to have been the first person to point out the connexion between light and magnetism. To experimentally illustrate this important fact, he employed a prism, and caused the decomposed rays to fall on a series of small needles, and the needle intersected by the violet ray was soon found to acquire permanent polarity. It has since been ascertained that this property is not peculiar to the violet ray, but extends, though in a less degree, through several other rays in the series.

347. Our present article was commenced with a few facts illustrative of the history of optics, when viewed in connexion with the theory of light; it may now be advisable to furnish similar data for a right understanding of the progress that has been made in the construction of *optical machines*.

348. The ancients were so little acquainted with the science of optics that they seem to have had no instruments of the optical kind, excepting the glass globes and speculums formerly mentioned, which they used in some cases for magnifying and burning. Alhazen gave the first hint of the invention of spectacles, and it is probable that they were found out soon after his time. From the writings of Alhazen, together with the observations and experiments of Roger Bacon, it is not improbable that some monks gradually hit upon the construction of spectacles; to which Bacon's smaller segment, notwithstanding his mistake concerning it, was a nearer approach than Alhazen's larger one. Whoever they were that pursued the discoveries of Bacon, they probably observed that a very small convex glass, when held at a greater distance from the book, would magnify the letters more than when it was placed close to them, in which position only Bacon seems to have used it. In the next

place, they might try whether two of these small segments of a sphere placed together, or a glass convex on both sides, would not magnify more than one of them. They would then find that two of these glasses, one for each eye, would answer the purpose of reading better than one; and, lastly, they might find that different degrees of convexity suited different persons.

349. It is certain that spectacles were well known in the thirteenth century, and not long before. It is said that Alexander Spina, a native of Pisa, who died in 1313, and who was very ingenious in executing whatever he saw or heard of as having been done by others, happened to see a pair of spectacles in the hands of a person who would not explain them to him; but that he succeeded in making a pair for himself, and immediately made the construction public, for the good of others. It is also inscribed on the tomb of Salvinus Armatus, a nobleman of Florence, who died in 1317, that he was the inventor of spectacles.

350. The use of concave glasses to help those persons who are shortsighted was probably a discovery that followed not long after that of convex ones for the relief of those whose sight is defective in the contrary extreme, though we find no trace of this improvement. From this time, though both convex and concave lenses were sufficiently common, yet no attempt was made to form a telescope, by a combination of them, till the end of the sixteenth century. Descartes considers James Metius, a person who was no mathematician, though his father and brother had applied to those sciences, as the first constructor of a telescope; and says that, as he was amusing himself with making mirrors and burning-glasses, he casually thought of looking through two of his lenses at a time, and that happening to take one that was convex and another that was concave, and happening also to hit upon a pretty good adjustment of them, he found that, by looking through them, distant objects appeared very large and distinct. In fact, without knowing it, he had made a telescope.

351. Others say that this great discovery was first made by John Lippersheim, a maker of spectacles at Middleburg, or rather by his children; who, like Metius, were diverting themselves with looking through two glasses at a time, and placing them at different distances from one another. But Borellus, the author of a book entitled *De vero Telescopii Inventore*, gives this honor to Zacharias Joannides or Jansen, another maker of spectacles at the same place, who made the first telescope in 1590; and it seems now to be the general opinion that this account of Borellus is the most probable. Indeed his account of the discovery of telescopes is so circumstantial, and so well authenticated, that it does not seem possible to call it in question. It is not true, he says, that this great discovery was made by a person who was no philosopher; for Zacharias Jansen was a diligent enquirer into nature; and, being engaged in these pursuits, he was trying what uses could be made of lenses for those purposes, when he fortunately hit upon the construction.

352. This ingenious mechanic and philosopher

had no sooner found the arrangement of glasses that produced the effect he desired than he enclosed them in a tube, and ran with his instrument to prince Maurice, who, immediately conceiving that it might be of use to him in his wars, desired the author to keep it a secret. But this was impossible; and several persons in that city immediately began to make and sell telescopes. One of the most distinguished of these was John Laprey, called Lippersheim by Sirturus. By him some person in Holland being very early supplied with a telescope, he passed with many for the inventor; but both Metius above mentioned, and Cornelius Drebell of Alémaer, in Holland, applied to the inventor himself in 1620; as did also Galileo, and many others. The first telescope made by Jansen did not exceed fifteen or sixteen inches in length; but Sirturus, who says that he had seen it and made use of it, thought it the best that he had ever examined.

353. Jansen, having a philosophical turn, applied his instrument to such purposes as he had in view when he hit upon the construction. Directing it towards celestial objects, he distinctly viewed the spots on the surface of the moon, and discovered many new stars, particularly seven pretty considerable ones in the Great Bear. His son, John Zacharias, noted the lucid circle near the limb of the moon, whence several bright rays seem to dart in different directions; and he says that the full moon, viewed through this instrument, did not appear flat, but was evidently spherical, the middle part being prominent. Jupiter also, he says, appeared round, and rather spherical; and sometimes he perceived two, sometimes three or four small stars, a little above or below him; and, as far as he could observe, they performed revolutions round him. This was probably the first observation of the satellites of Jupiter.

354. It may be proper to add, that Francis Fontana, an Italian, also claims the invention; but he did not pretend to have made it before 1608, and it is well known that the instruments were made and sold in Holland some time before.

355. Some say that Galileo was the inventor of telescopes; but he himself acknowledges that he first heard of the instrument from a German; but he says that being informed of nothing more than the effects of it, first by common report and a few days after by a French nobleman, J. Badovere, at Paris, he himself discovered the construction, by considering the nature of refraction: and thus he had much more real merit than the inventor himself. The account of what Galileo actually did in this business is circumstantially related by the author of his life, prefixed to the 4to. edition of his works, printed at Venice in 1744. About April or May, 1609, it was reported at Venice, where Galileo (who was professor of mathematics in the university of Padua) then happened to be, that a Dutchman had presented to prince Maurice of Nassau a certain optical instrument by means of which distant objects appeared as if they were near; but no farther account of the discovery had reached that place, though this was nearly twenty years after the first discovery. Struck, however, with this

account, Galileo instantly returned to Padua, considering what kind of an instrument this must be. The night following the construction occurred to him; and the day after, putting the parts of the instrument together, as he had previously conceived of it, and notwithstanding the imperfection of the glasses that he could then procure, the effect answered his expectation, as he acquainted his friends at Venice, to which place he six days afterwards carried another and a better instrument, and where, from several eminences, he showed to some of the principal senators of that republic a variety of distant objects, to their very great astonishment. When he had made farther improvements in the instrument, he made a present of one of them to the doge, Leonard Donati, and of one to each of the senators of Venice; giving along with the instrument a written paper, in which he explained the structure and wonderful uses that might be made of it both by land and at sea. In return, the republic, on the 25th of August, the same year, more than tripled his salary as professor.

356. Galileo, directing his tube towards the moon, found that the surface of it was diversified with hills and valleys, like the earth. He also discovered that the *via lactea* and nebulae consisted of a collection of fixed stars, which, on account either of their vast distance or extreme smallness, were invisible to the naked eye. He likewise observed innumerable fixed stars dispersed over the face of the heavens, which had been unknown to all the ancients: and, examining Jupiter with a better instrument than any he had made before, he found that he was accompanied by four stars, which performed periodical revolutions round him, and which, in honor of the Medici, he called Medicean planets. This discovery he made in January 1610, N. S., and in March he published an account of all his discoveries, in his *Nuncius Sidericus*, printed at Venice, and dedicated to Cosmo, great duke of Tuscany, who, by a letter dated 10th of July 1610, invited him to quit Padua, and assigned him an ample stipend, as primate and extraordinary professor at Pisa, but without any obligation to read lectures, or to reside. The extraordinary discoveries contained in the *Nuncius Sidericus*, which was quickly reprinted in Germany and France, were the cause of much debate among the astronomers; many of whom could not credit Galileo's account, while others ridiculed his discoveries as fictions or illusions. Some could not be prevailed upon even to look through a telescope; so devoted were they to the system of Aristotle. But, when it was found vain to oppose the evidence of sense, some affirmed that the invention was taken from Aristotle; and quoting his writings, in which he mentions stars seen in the day-time from the bottom of a deep well, said, that the well corresponded to the tube of the telescopes, and that the vapors which arose from it gave the hint of putting glasses into it; and that in both cases the sight is strengthened by the transmission of the rays through a thick and dark medium. Galileo himself, who tells this story, humorously compared such men to alchymists, who pretend that the art of making gold was known to the ancients, but lay concealed under the fables of the poets.

357. In July, 1610, Galileo being still at Padua, and getting an imperfect view of Saturn's ring, imagined that the planet consisted of three parts; and therefore, in the account which he gave of this discovery to his friends, he calls it *planetam terginam*. He also observed some spots on the face of the sun: but did not then publish his discovery; partly for fear of irritating the obstinate Aristotelians, and partly to make more exact observations on this remarkable phenomenon. He therefore contented himself with communicating his discovery to some of his friends at Padua and Venice, among whom was F. Paul. This delay, however, was the cause of this discovery being contested with him by the famous Scheiner, who likewise made the same observation in October 1611, and anticipated Galileo in the publication of it. About the end of August Galileo left Padua and went to Florence; and in November following he was satisfied, that from September Venus had been continually increasing in bulk, and that she changed her phases like the moon. About the end of March 1611 Galileo went to Rome, where he gratified the cardinals and the chief nobility with a view of the new wonders he had discovered in the heavens, and among others the solar spots. From these discoveries Galileo obtained the name of *Lynceus*, after one of the Argonauts, who was famous in antiquity for the acuteness of his sight; and the marquis of Monticelli instituted an academy, with the title of *Lincei*, and made him a member of it. Galileo enjoyed the use of his telescope twenty-nine years, continually enriching astronomy with his observations: but, by too close application during the nocturnal air, his eyes grew gradually weaker, till in 1639 he became totally blind; a calamity which, however, neither broke his spirits, nor interrupted the course of his studies. The first telescope that Galileo constructed magnified only three times; but soon after he made another which magnified eighteen times; and afterwards, with great trouble and expense, he constructed one that magnified thirty-three times: and with this he discovered the satellites of Jupiter and the spots of the sun.

358. Although Galileo had great merit with respect to telescopes, yet he did not explain the rationale of the instrument. This important service to science was performed by John Kepler, whose name is famous in the annals of philosophy, especially by his discovery of the great law of motion respecting the heavenly bodies; which is that the squares of their periodical times are as the cubes of their distance from the body about which they revolve; a proposition which, however, was not demonstrated before Sir Isaac Newton. Kepler was astronomer to several emperors of Germany; he was the associate of the celebrated astronomer Tycho Brahe, and the master of Descartes. He made several discoveries relating to the nature of vision; and not only explained the rationale of the telescopes which he found in use, but also pointed out methods of constructing others of superior powers and more commodious use. Kepler first gave a clear explanation of the effects of lenses in making the rays of a pencil of light converge or diverge. He showed that a plano-convex lens makes rays pa-

rallel to its axis to meet at the distance of the diameter of the sphere of convexity; but that, if both sides of the lens be equally convex, the rays will have their focus at the distance of the radius of the circle corresponding to that degree of convexity. But he did not investigate any rule for the foci of lenses unequally convex. To Cavalieri we owe this investigation. He laid down this rule: as the sum of both the diameters is to one of them, so is the other to the distance of the focus. All these rules concerning convex lenses are applicable to those that are concave; with this difference, that the focus is on the contrary side of the glass.

359. The principal effects of telescopes depend upon these plain maxims, viz. That objects appear larger in proportion to the angles which they subtend at the eye; and the effect is the same whether the pencils of rays by which objects are visible to us come directly from the objects themselves, or from any place nearer to the eye, where they may have been united so as to form an image of the object; because they issue again from those points where there is no real substance, in certain directions, in the same manner as they did from the corresponding points in the objects themselves. All that is effected by a telescope is, first to make such an image of a distant object, by means of a lens or mirror; and then to assist the eye in viewing that image as near as possible; so that the angle, which it shall subtend at the eye, may be very large compared with the angle which the object itself would subtend. This is done by an eye-glass, which so refracts the pencils of rays as that they may afterwards be brought to their several foci by the natural humors of the eye. If, instead of an eye glass, an object may be looked at through a small hole in a thin plate or piece of paper, held close to the eye, it may be viewed very near to the eye, and, at the same distance, the apparent magnitude of the object will be the same in both cases. But, as very few rays can be admitted through a small hole, there is seldom light sufficient to view an object to advantage in this way.

360. Such was the telescope first discovered and used by astronomers; and it is of a much more difficult construction than some other kinds that have been invented since. The great inconvenience attending it is, that the field of view is exceedingly small. For, since the pencils of rays enter the eye very much diverging from one another, but few of them can be intercepted by the pupil; this inconvenience increases with the magnifying power of the telescope, so that philosophers at this day cannot help wondering that it was possible, with such an instrument, for Galileo and others to have made the discoveries they did. It must have required incredible patience and address. No other telescope, however, than this, was so much as thought of for many years after the discovery. Descartes, who wrote thirty years after, mentions no others as actually constructed. To Kepler we are indebted for the invention of the astronomical telescope, the best adapted for viewing the heavenly bodies. The rationale of this instrument is explained, and the advantages of it are clearly pointed out, by this philosopher, in his *Catoptrics*; although he ne-

ver actually reduced his excellent theory into practice. Montucla conjectures that he was not aware of the great increase of the field of view, and that, being engaged in other pursuits, he might think it of no importance to construct an instrument which could do little more than answer the same purpose with those of which he was already possessed. Kepler's new scheme of a telescope was however soon executed. The first who made an instrument of this construction was F. Scheiner, who described it in his *Rosa Ursina*, published in 1630. It, says he, you insert two similar lenses (both convex) in a tube, and place your eye at a convenient distance, you will see all terrestrial objects inverted indeed, but magnified and very distinct, with a considerable extent of view. He subjoins an account of a telescope of a different construction, with two convex eye-glasses, which reverse the images, and make them appear in their natural position. This disposition of the lenses had also been pointed out by Kepler. F. Rheita soon after hit upon a better construction, using three eye-glasses instead of two. This was named the terrestrial telescope, being chiefly used for terrestrial objects.

361. The first and last of these constructions are those which are now in common use. The proportion in which the first telescope magnifies is as the focal length of the object-glass to that of the eye-glass.—The only difference between the Galilean telescope and the other is, that the pencils by which the extremities of any object are seen in this case enter the eye diverging; whereas, in the other, they enter it converging; but, if the sphere of concavity in the eye-glass of the Galilean telescope be equal to the sphere of convexity in the eye-glass of another telescope, their magnifying power will be the same. The concave eye-glass however, being placed between the object-glass and its focus, the Galilean telescope will be shorter than the other by twice the focal length of the eye-glass. Consequently, if the length of the telescopes be the same, the Galilean will have the greater magnifying power. The invention of the telescope and microscope having incited mathematicians to a more careful study of dioptrics, and this having soon become almost a perfect science, by the discovery of Snellius, many different constructions were offered to the public. Huygens was particularly eminent for his systematic knowledge of the subject, and is the author of the chief improvements which have been made on all the dioptrical instruments till the time of Mr. Dollond's discovery. He was well acquainted with the theory of aberration arising from the spherical figure of the glasses, and has showed several ingenious methods of diminishing them by proper constructions of the eye-pieces. He first showed the advantages of two eye-glasses in the astronomical telescope and double microscope, and gave rules for this construction, which both enlarges the field and shortens the instrument. Mr. Dollond adapted his construction to the terrestrial telescope of Rheita; and his five eye-glasses are nothing but the Huygenian eye-piece doubled. This construction has been too hastily given up by the artists of the present day for another, also

of Mr. Dollond's, of four glasses. Vision is more distinct in the Galilean telescope than in the other, owing perhaps in part to there being no intermediate image between the eye and the object. Besides, the eye-glass being very thin in the centre, the rays will be less liable to be distorted by irregularities in the substance of the glass. Whatever be the cause, we can sometimes see Jupiter's satellites very clearly in a Galilean telescope not more than twenty or twenty-four inches long: when one of four or five feet, of the common sort, will hardly make them visible.

362. F. Rheita also invented a binocular telescope, which F. Cherubin of Orleans endeavoured to bring into use. It consists of two telescopes fastened together, and made to point to the same object. When this instrument is well fixed, the object appears larger and nearer to the eye, when it is seen through both the telescopes, than through one of them only, though they have the very same magnifying power. But this is only an illusion, occasioned by the stronger impression that two equal images, equally illuminated, make upon the eye. This advantage, however, is counterbalanced by the inconvenience attending the use of it.

363. The first who distinguished themselves in grinding telescopic glasses were two Italians, Eustace Divini at Rome, and Campani at Bologna, whose fame was much superior to that of Divini, or that of any other person of his time; though Divini pretended that in all the trials that were made with their glasses, his of a great focal distance performed better than those of Campani, and that his rival was not willing to try them fairly, viz. with equal eye-glasses. Campani, however, really excelled Divini, both in the goodness and the focal length of his object-glasses. It was with telescopes made by Campani that Cassini discovered the nearest satellites of Saturn. They were made by the express order of Louis XIV., and were of eighty-six, 100, and 136 Parisian feet focal length. Campani sold his lenses at a high price, and took every possible method to keep his art a secret. His laboratory was inaccessible till after his death; when it was purchased by pope Benedict XIV., who made a present of it to the Institute of that city; and, by the account which M. Fougeroux has given of what he could discover from it, we learn, that (except a machine, which M. Campani constructed to work the basins on which he ground his glasses) the goodness of his lenses depended upon the clearness of his glass, his Venetian tripoli, the paper with which he polished his glasses, and his great skill and address as a workman. He made few lenses of a very great focal distance; and having the misfortune to break one of 141 feet in two pieces, he took incredible pains to join the two parts together, which he did at length effectually, so that it was used as if it had been entire.

364. Sir Paul Neille, Dr. Hooke says, made telescopes of thirty-six feet, pretty good, and one of fifty. Afterwards Mr. Reive, and then Mr. Cox, who were the most celebrated in England as grinders of optic glasses, made some good ones of fifty and sixty feet focal distance, and

Mr. Cox made one of 100. Borelli also, in France, made object-glasses of a great focal length, one of which he presented to the Royal Society. With respect to the focal length of telescopes, these and all others were far exceeded by M. Auzout, who made one object-glass of 600 feet focus; but he was never able to make any use of it. Hartsoeker is even said to have made some of a still greater focal length; but this ingenious mechanic, finding it impossible to make use of object-glasses the focal distance of which was much less than this, when they were enclosed in a tube, contrived a method of using them without a tube, by fixing them at the top of a tree, a high wall, or the roof of a house.

365. Mr. Huygens also made considerable improvements in the method of using an object-glass without a tube. He placed it at the top of a very long pole, having previously enclosed it in a short tube, which was made to turn in all directions by a ball and socket. The axis of this tube he could command with a fine silken string so as to bring it into a line with the axis of another short tube which he held in his hand, and which contained the eye-glass. He thus could use object-glasses of the greatest magnifying power, at whatever altitude his object was, and even in the zenith, provided his pole was as long as his telescope; and, to adapt it to the view of objects of different altitudes, he had a contrivance by which he could raise or depress a stage that supported his object-glass at pleasure.

366. M. Auzout, in a paper read before the Royal Society, observed that the apertures which the object-glasses of refracting telescopes can bear with distinctness are in about a sub-duplicate proportion to their lengths; and upon this supposition he drew up a table of the apertures proper for object-glasses of a great variety of focal lengths, from four inches to 400 feet. Upon this occasion Dr. Hooke observed that the same glass will bear a greater or less aperture, according to the less or greater light of the object. If, for instance, he was viewing the sun, or Venus, or any of the fixed stars, he used smaller apertures; but if he wanted to view the moon by day light, or Saturn, Jupiter, or Mars, by night, he used a larger aperture.

367. But the merit of all those improvements was in a manner cancelled by the discovery of the much more commodious reflecting telescope. For a refracting telescope, even of 1000 feet focus, supposing it possible to be made use of, could not be made to magnify with distinctness more than 1000 times; whereas a reflecting telescope, not exceeding nine or ten feet, will magnify 1200 times. 'It must be acknowledged,' says Dr. Smith in his *Complete System of Optics*, 'that Mr. James Gregory of Aberdeen was the first inventor of the reflecting telescope.' But, according to Dr. Pringle, Mersennus was the man who entertained the first thoughts of a reflector. A telescope with specula he certainly proposed to the celebrated Descartes many years before Gregory's invention, though indeed in a manner so very unsatisfactory that Descartes, who had given particular attention to the improvement of the telescope, was so far from approving the proposal, that he endeavoured to

convince Mersennus of its fallacy. See TELESCOPE. Dr. Smith had not seen two letters of Descartes to Mersennus on that subject.

368. Gregory, a young man of an uncommon genius, was led to the invention in seeking to correct two imperfections of the common telescope: the first was its too great length, which made it less manageable; the second, the incorrectness of the image. Mathematicians had demonstrated that a pencil of rays could not be collected in a single point of a spherical lens; and also that the image transmitted by such a lens would be in some degree incurvated. These inconveniences he believed would be obviated by substituting for the object-glass a metallic speculum, of a parabolic figure, to receive the image, and to reflect it towards a small speculum of the same metal; this again was to return the image to an eye-glass placed behind the great speculum, which for that purpose was to be perforated in its centre. This construction he published in 1663 in his *Optica Promota*. But as Gregory was endowed with no mechanical dexterity, nor could find any workman capable of realising his invention, after some fruitless attempts in that way, he was obliged to give up the pursuit; and probably, had not some new discoveries been made in light and colors, a reflecting telescope would never more have been thought of, considering the difficulty of the execution, and the small advantages that could accrue from it, deducible from the principles of optics then known.

369. But Newton, whose genius for experimental knowledge was equal to that for geometry, happily interposed, and saved this noble invention from well nigh perishing in its infant state. He likewise, at an early period of life, had applied himself to the improvement of the telescope; but, imagining that Gregory's specula were neither very necessary nor likely to be executed, he began with prosecuting the views of Descartes, who aimed at making a more perfect image of an object by grinding lenses, not to the figure of a sphere, but to that of a conic section. While he was thus employed, three years after Gregory's publication, he happened to examine the colors formed by a prism, and, having by that simple instrument discovered the different refrangibility of the rays of light, he perceived that the errors of telescopes, arising from that cause alone, were some hundred times greater than those occasioned by the spherical figure of lenses. This circumstance forced Newton to fall into Gregory's track, and to turn his thoughts to reflectors. 'The different refrangibility of the rays of light,' he says, in a letter to Mr. Oldenburg, secretary to the Royal Society, dated February, 1672, 'made me take reflectors into consideration; and finding them regular, so that the angle of reflection of all sorts of rays was equal to the angle of incidence, I understood that, by their mediation, optic instruments might be brought to any degree of perfection imaginable, providing a reflecting substance could be found which would polish as finely as glass, and reflect as much light as glass transmits, and the art of communicating to it a parabolic figure be also obtained. Amidst these thoughts I was forced from Cambridge by

the intervening plague, and it was more than two years before I proceeded further.' If Newton, then, was not the first inventor of the reflecting telescope, he was the main and effectual inventor. By his admirable genius he fell upon this new property of light; and thereby found that all lenses, of whatever figure, would be affected more or less with such prismatic aberrations of the rays as would be an insuperable obstacle to the perfection of a dioptric telescope.

370. About the end of 1668, or beginning of 1669, Newton, not relying on any artificer for making his specula, set about the work himself, and early in 1672 completed two small reflecting telescopes. In these he ground the great speculum into a spherical concave, but found himself unable to accomplish the parabolic form. In the letter that accompanied one of these instruments, which he presented to the Society, he writes, 'that though he then despaired of performing that work (to wit, the parabolic figure of the great speculum) by geometrical rules, yet he doubted not but that the thing might in some measure be accomplished by mechanical devices.'

371. Not less did the difficulty appear to find a metallic substance that would be of a proper hardness, have the fewest pores, and receive the smoothest polish: a difficulty which he deemed almost insurmountable, when he considered that every irregularity in a reflecting surface would make the rays of light stray five or six times more out of their due course than the like irregularities in a refracting one. In another letter written soon after he tells the secretary 'that he was very sensible that metal reflects less light than glass transmits; but as he had found some metallic substances to be more strongly reflective than others, to polish better, and to be freer from tarnishing than others, so he hoped that there might in time be found out some substances much freer from these inconveniences than any yet known.' Newton therefore labored till he found a composition that answered in some degree, and presented a reflecting telescope to the Royal Society; from whom he received such thanks as were due to so curious and valuable a present. And Huygens, one of the greatest geniuses of the age, and a distinguished improver of the refractor, no sooner was informed by Mr. Oldenburg of the discovery, than he wrote an answer 'that it was an admirable telescope; and that Mr. Newton had well considered the advantage which a concave speculum had above convex glasses in collecting the parallel rays, which, according to his own calculation, was very great; hence that Mr. Newton could give a far greater aperture to that speculum than to an object-glass of the same distance of focus, and consequently much more magnify in his way than by an ordinary telescope. Besides that by the reflector he avoided an inconvenience inseparable from object-glasses, which was the obliquity of both their surfaces, which vitiated the refraction of the rays that pass towards the sides of the glass, and did more hurt than men were aware of. Again, that by the mere reflection of the metalline speculum there were not so many rays lost as in glasses, which reflected a considerable quantity by each of their surfaces, and, besides, intercepted many of them by the

obscurity of their matter: that the main business would be to find a matter for this speculum that would bear as good a polish as glass.'

372. Mr. Huygens was not satisfied with thus expressing to the Society his high approbation of Newton's invention; but drew up a favorable account of the new telescope, which he caused to be published in the *Journal de Sçavans* for 1672, by which it was soon known over Europe. But how excellent soever the contrivance was, how well soever supported and announced to the public, yet whether it was that the artists were deterred by the difficulty and labor of the work, or that the discoveries even of a Newton were not to be exempted from the general fatality attending great and useful inventions, the making a slow and vexatious progress to the authors; the fact is that, excepting an unsuccessful attempt which the Society made, by employing an artificer to imitate the Newtonian construction, but upon a larger scale, and a disguised Gregorian telescope, set up by Cassegrain abroad as a rival to Newton's, and that in theory only (for it was never put in execution by the author) no reflector was heard of for nearly half a century after. But a reflecting telescope was at last produced to the world, of the Newtonian construction, by Dr. Hadley, which the author had the satisfaction to find executed in such a manner as left no room to fear that the invention would any longer continue in obscurity.

373. This memorable event was owing to the genius, dexterity, and application of Dr. Hadley, the inventor of the reflecting quadrant, another most valuable instrument. The two telescopes which Newton had made were but six inches long, were held in the hand for viewing objects, and in power were compared to a six feet refractor; whereas Hadley's was above five feet long, was provided with a well-contrived apparatus for managing it, and equalled in performance the famous aerial telescope of Huygens of 123 feet in length. Excepting as to the manner of making the specula we have, in the transactions of 1723, a complete description, with a figure of this telescope, together with that of the machine for moving it; but, by a strange omission, Newton's name is not once mentioned in that paper; so that any person not acquainted with the history of the invention, and reading that account only, might be apt to conclude that Hadley had been the sole inventor. The same celebrated artist, after finishing two telescopes of the Newtonian construction, accomplished a third in the Gregorian way; but, it would seem, less successfully, by Dr. Smith's declaring so strongly in favor of the other. Dr. Hadley instructed Mr. Molyneux and the Rev. Dr. Bradley; and when these gentlemen had made a sufficient proficiency in the art, being desirous that these telescopes should become more public, they liberally communicated to some of the principal instrument-makers of London the knowledge they had acquired from him. Such scholars soon advanced beyond their masters, and completed reflectors by other and better methods than what had been taught them.

374. Mr. James Short, as early as 1734, had signalled himself at Edinburgh by his instruments

of this kind. Mr. Maclaurin wrote that year to Dr. Jurin, 'that Mr. Short, who had begun with making glass specula, was then applying himself to improve the metallic; and that, by taking care of the figure, he was enabled to give them larger apertures than others had done; and that upon the whole they surpassed in perfection all that he had seen of other workmen.' He added, 'that Mr. Short's telescopes were all of the Gregorian construction; and that he had much improved that excellent invention.' This character of excellence Mr. Short maintained to the last; as he had been well grounded both in the geometrical and philosophical principles of optics, and upon the whole was a most intelligent person in whatever related to his profession. It was supposed he had fallen upon a method of giving the parabolic figure to his great speculum: a point of perfection which Hadley never attempted, either in his Newtonian or Gregorian telescope. Mr. Short indeed said he had acquired that faculty, but never would tell by what means he effected it; so that the secret of working that configuration died with that ingenious artist. Mr. Mudge, however, has lately realised the expectation of Sir Isaac Newton, who about 100 years ago presaged that the public would one day possess a parabolic speculum, not accomplished by mathematical rules, but by mechanical devices.

375. This desideratum was not the only want supplied by this gentleman: he taught us likewise a better composition of metals for the specula, how to grind them better, and how to give them a finer polish; and the polish, he remarks, was the most difficult and essential of the whole operation. 'In a word,' says Sir John Pringle, 'I am of opinion there is no optician in this great city (which has been so long and so justly renowned for ingenious and dextrous makers of every kind of mathematical instruments) so partial to his own abilities as not to acknowledge that, however some parts of the mechanical process now disclosed might have been known before any individuals of the profession, yet that Mr. Mudge has opened to them all some new and important lights, and upon the whole hath greatly improved the art of making reflecting telescopes.'

376. The late Rev. and ingenious John Edwards devoted much of his time to the improvement of reflecting telescopes, and brought them to such perfection that Dr. Maskelyne, the astronomer royal, found telescopes constructed by him to surpass in brightness, and other essentials, those of the same size made by the best artists in London. The chief excellence of his telescopes arises from the composition, which, from various trials on metals and semimetals, he discovered for the specula, and from the true parabolic figure, which, by long practice, he had found a method of giving them, preferable to any that was known before him. His directions for the composition of specula, and for casting, grinding, and polishing them, were published, by order of the commissioners of longitude, at the end of the Nautical Almanac for 1787; to which is also annexed his account of the cause and cure of the tremors which particularly affect reflecting telescopes more than refracting ones,

together with remarks on the said tremors by Dr. Maskelyne.

377. But, in constructing reflecting telescopes of extraordinary magnifying powers, Dr. Herschel displayed skill and ingenuity surpassing all his predecessors. He made them from seven, ten, twenty, to even forty feet in length. Of its construction, magnifying powers, and the curious collection of machinery by which it is supported and moved from one part of the heavens to another, accounts will be found under TELESCOPE.

378. The greatest improvement in refracting telescopes hitherto made public is that of Mr. Dollond. But besides the obligations we are under to him for correcting the aberration of the rays of light in the focus of object-glasses, arising from their different refrangibility, he made another considerable improvement, viz. by correcting both this kind of aberration, and also that which arises from the spherical form of lenses, by an expedient of a very different nature, viz. increasing the number of eye-glasses. If any person, says he, would have the visual angle of a telescope to contain 20° , the extreme pencils of the field must be bent or refracted in an angle of 10° ; which, if it be performed by one eye-glass, will cause an aberration from the figure, in proportion to the cube of that angle; but, if two glasses are so proportioned and situated as that the refraction may be equally divided between them, they will each of them produce a refraction equal to half the required angle; and therefore the aberration, being in proportion to the cube of half the angle taken twice over, will be but a fourth part of that which is in proportion to the cube of the whole angle; because twice the cube of one is but one-fourth of the cube of two; so the aberration from the figure, where two eye-glasses are rightly proportioned, is but a fourth of what it must unavoidably be where the whole is performed by a single eye-glass. By the same reasoning, when the refraction is divided between three glasses, the aberration will be found to be but the ninth part of what would be produced from a single glass; because three times the cube of one is but one-ninth of the cube of three. Whence it appears that, by increasing the number of the eye-glasses, the indistinctness which is observed near the borders of the field of a telescope may be very much diminished, though not entirely taken away.

379. The method of correcting the errors arising from the different refrangibility of light is of a different consideration. For, whereas the errors from the figure can only be diminished in a certain proportion according to the number of glasses, in this they may be entirely corrected by the addition of only one glass; as we find in the astronomical telescope that two eye-glasses, rightly proportioned, will cause the edges of objects to appear free from colors, quite to the border of the field. Also in the day telescope, where no more than two eye-glasses are absolutely necessary for erecting the object, we find that, by the addition of a third rightly situated, the colors, which would otherwise make the image confused, are entirely removed. This, however, is to be understood with some limita-

tion; for, if the glasses exceed a certain length, the colors may be spread too wide to be admitted through the pupil of the eye; which is the cause that in long telescopes, with three eye-glasses, the field is always greatly contracted.

380. These considerations first set Mr. Dollond on contriving how to enlarge the field by increasing the number of eye-glasses without any hindrance to the distinctness or brightness of the image; and though others had been about the same work before, yet, observing that some five-glass telescopes then made would admit of farther improvement, he endeavoured to construct one with the same number of glasses in a better manner; which was allowed by the best judges to be a considerable improvement on the former. Thus encouraged he resolved to try if he could make some farther enlargement on the field by the addition of another glass, and by placing and proportioning the glasses in such a manner as to correct the aberrations, without detriment to the distinctness. At last he obtained as large a field as is necessary, even in the longest telescopes that can be made. These telescopes with six glasses having been well received, and some of them purchased abroad, the author fixed the date of his invention, in a letter, addressed to Mr. Short, which was read to the Royal Society, March 1st, 1753.

381. Various attempts were made about this time to shorten and otherwise improve telescopes. Among these we must mention that of Mr. Caleb Smith, who thought he had found it possible to rectify the errors which arise from the different degrees of refrangibility, on the principle that the sines of refraction, or rays differently refrangible, are to one another in a given proportion, when their sines of incidence are equal; and he proposed for this purpose to make the speculums of glass instead of metal, the two surfaces having different degrees of concavity. But his scheme was never executed; nor is it probable, for reasons which have been mentioned, that any advantage could be made of it.

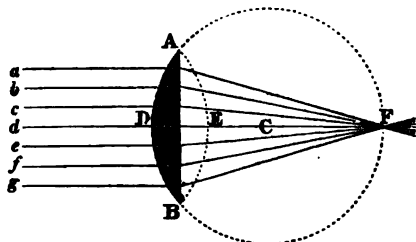
382. To Mr. Short we are indebted for the excellent contrivance of an equatorial telescope, or portable observatory; whereby pretty accurate observations may be made with little trouble by those who have no building adapted to the purpose. This instrument consists of an ingenious piece of machinery, by the help of which a telescope mounted upon it may be directed to any degree of right ascension or declination, so that the place of any of the heavenly bodies being known, they may be found without any trouble, even in the day-time. Being made to turn parallel to the equator, any object is easily kept in view, or recovered, without moving the eye from its situation. By this instrument, Mr. Short informs us, that most of the stars of the first and second magnitude have been seen even at mid-day, and the sun shining bright; as also Mercury, Venus, and Jupiter. Saturn and Mars are not so easy to be seen, on account of the faintness of their light, except when the sun is but a few hours above the horizon. This particular effect depends upon the telescope excluding almost all the light, except what comes from the object itself, and which might otherwise efface the impression made by its weaker light upon the eye.

For the same reason stars are visible in the day-time from the bottom of a deep pit. Mr. Ramsden has also invented a portable observatory or equatorial telescope. This, however, as well as the improved telescopes by Herschel and Ramsden, will be fully described under the article exclusively devoted to the subject.

383. The most important part of every compound optical instrument is the *lens*; it may therefore be advisable to illustrate their general form by a series of diagrams, and then furnish the mathematical data for their construction.

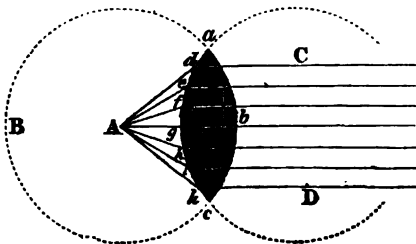
384. A lens is any transparent substance, as glass, crystal, water, or diamond, having one or both of its surfaces curved to collect or disperse the light transmitted by it. The lenses in general use are made of glass, and are usually called magnifying glasses. Glass, however, does not possess a greater share of the magnifying property than other transparent substances. In fig. 5 there are six differently shaped lenses, shown in section. A is called a plano-convex, from having one side flat, and the other spherically rounded. B is a double convex, and has both sides spherically rounded. When these sides are unequally curved, as at C, it is termed a crossed lens. D is a plano-concave, having one side spherically hollow. E is a double concave with both sides hollow. F is a meniscus (so called from its moon shape), and has one side convex and the other concave.

385. The passage of light when transmitted by a plano-convex lens, is shown in the accompanying diagram. The parallel rays *a, b, c, &c.*, fall-



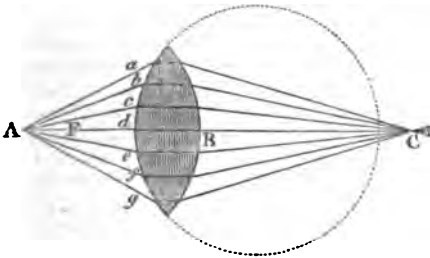
ing upon the plano-convex lens A D B, and passing through it, are but half as much refracted as they would be in passing through the double convex lines A D B E, and therefore their focus or point of meeting is not at C but at F, which is at twice the distance, or double the radius of the convexity of the lens. After intersecting at F they diverge.

386. When an object is placed in the focus of a lens, the rays diverging from it will, by the action of the lens, be rendered parallel. Thus, in the annexed diagram, the radiant point A,



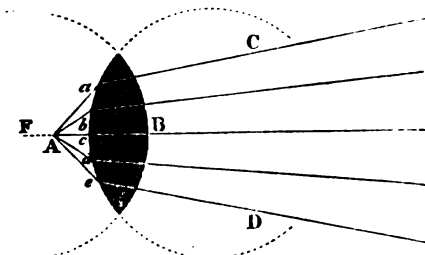
from which the rays d, e, f , &c., diverge, is in the centre of convexity of the double convex lens a, b, c . After passing through the lens, the rays go on parallel to each other in the space $C D$. If the lens had been plano-convex, the radiant point for this purpose must have been at B , or at twice the distance of A from B .

387. Rays diverging from a radiant point beyond the focal distance of a convex lens, will, after passing through the lens, converge to a point or focus on the other side of the lens. Thus in the following diagram F is the focus of the lens



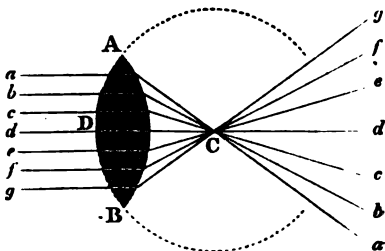
B , and A is the radiant point from which the rays a, b, c , &c., diverge. After passing through the lens they will converge and meet in a focal point, as at C . The farther A is from B the nearer will C be to it.

388. Rays diverging from a radiant point between a convex lens and its focus will continue to diverge, though in a less degree, after passing through the lens, as in the accompanying figure,



in which A is the radiating point from which the rays a, b, c , &c., diverge, and F is the focus of the lens B . These rays, after passing through the lens, continue to diverge in the space $C D$.

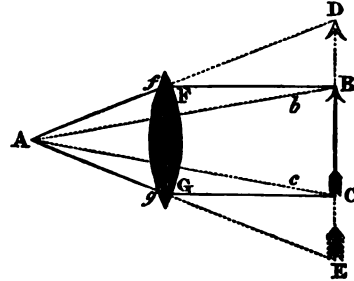
389. The focus of the sun's parallel rays, when transmitted through a double convex lens, is shown in the annexed figure. The parallel rays



a, b, c, d, e, f , falling obliquely on the surface $A D$ of a double convex lens, are refracted or bent inward in passing through the lens; and

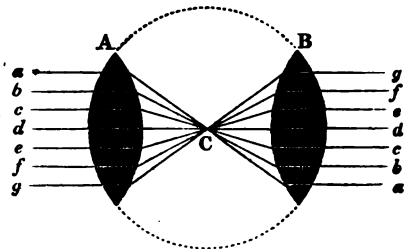
meet in a focus or point at C , which is the centre of the lens's convexity, beyond which they diverge to the contrary sides as a, b, c, d , &c. The middle ray d , falling perpendicularly on the surface of the lens at D , suffers no refraction in passing through it.

390. A convex glass magnifies the angle of vision; the reason is this. Without a lens, $F G$,



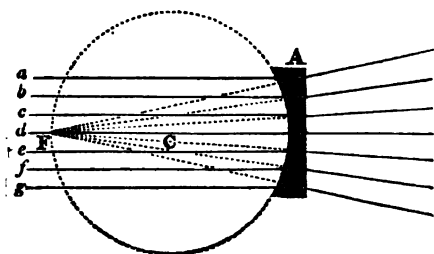
the eye would see the arrow BC under the angle bAc . But the rays BF and CG , from the extremities of the arrow, in passing through the lens are refracted to the eye in the directions fA, gA , which makes the arrow to be seen under the much larger angle dAe , the same as the angle fAg . Therefore the arrow will appear so much magnified as to extend in length from D to E .

391. Parallel rays become parallel again by passing through two convex lenses placed parallel to each other and at double their focal distance. Thus, in the accompanying diagram, C is the fo-

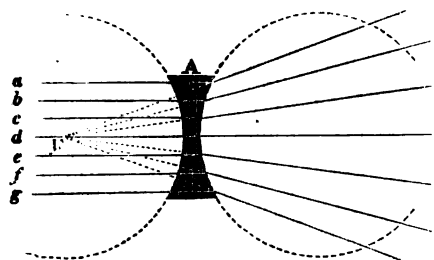


cus of both the lenses A and B . The parallel rays a, b, c, d, e, f , having passed through the lens A , go on converging to its focus C , where they unite and thence diverge in a contrary order to the lens B , and after passing through it they go on parallel to each other, but in an inverted order as a, b, c, d, e, f, g . The middle ray d goes on straight, because it falls perpendicularly on the surface of both the lenses.

392. Concave lenses obey the same laws of refraction as convex, but, as the curvature is reversed, the rays are bent outwards; hence a concave lens will render parallel rays diverging, as may be seen in the following diagram. The rays a, b, c , &c., after passing through a plano-concave lens A , will go on in a diverging state, the same as if the lens were taken away, and the rays had issued from a radiant point F in the virtual focus of the lens, which is at double the distance CA or radius of concavity of the lens.



393. Parallel rays passing through a double concave lens may also be made to diverge. Thus



the rays *a, b, c, &c.*, after passing through the double concave lens *A*, will go on in a diverging state, the same as if the lens were taken away and the rays had proceeded from a radiant point *F* in the virtual focus or centre of concavity of the lens.

394. The manner in which the foci of lenses of different curves are calculated, and how the foci of combined lenses may be obtained, are as follows:—When the lenses are made of plate-glass, the focal distance is nearly the diameter of the sphere from which we may suppose a plano-convex lens to be cut, or it is equal to twice the radius of the circle that forms the convex surface of the lens. For example, if the globe of glass is one inch in diameter, and a portion is cut off to form a plano-convex lens, the focus will be one inch, or twice the radius of the circle. If the lens is double convex, the focus will be equal to the radius, or half the diameter. When the lens is crossed, or unequally convex, the focal length will be twice the product of the two radii, divided by the sum of the radii. For example, let the radius on one side be two inches, and on the other side six inches; the focus of this will be $2 \times 2 \times 6 = 24$, divided by $2 + 6 = 8$ or three inches. The focus of the miniscus lens is found by dividing twice the product of the two radii by their difference. Example; let the radius on the convex side be two inches, and on the concave side four, the focus is $2 \times 2 \times 4 = 16$ divided by $4 - 2 = 2$, or eight inches, the focus of the lens.*

* In many cases it is found advisable to ascertain the radii of the two surfaces of a convex lens, as well as its focus, by a more accurate method. This may be effected by forming a reflected image by the posterior surface, which distance will be half of the radius of curvature (or one quarter the focus of a plano-convex lens); then, by exposing the other side, we obtain the radii of the opposite surface. This method was adopted by professor Robison to mea-

395. If two lenses are placed in contact, the compound focus, when each lens has the same power, will be half the focus of the single lens. When two convex lenses are in contact, having different focal lengths, then, as the sum of the two foci is to one of them, so is the other to the compound focus required. For example, let the foci of the lenses be 2 and 6; then, as $2 + 6 = 8 : 2 :: 6 : 1\frac{1}{2}$, the compound focus. Lastly, if two lenses are not in contact, the compound focus is found by dividing the product of the two lenses by the sum lessened by their distance. Example: let the foci of the lenses be 2 and 4, their distance 2; then $2 \times 4 = 8$ divided by $(2 + 4) - 2 = 4$ gives 2 as the compound focus.

396. If lenses be made of different substances, although the curves may be the same, the focal lengths will vary; while, in like mediums, the action will always be equal. Let *a, b*, fig. 6, be a ray of light, and let it enter the medium *c d* at the point *b*; instead of continuing in a right line to *e* it will pass on in the direction *b f*, should the medium *c d* be denser than the first *a b*; now if on the point *b* a circle be drawn, and a line *s i* parallel to the surface of the medium, touching the incident ray *a b*, be produced to *e*, this line will be the sine of incidence; and, if another line *p r* be drawn in the same manner to the refracted ray, it will be the sine of refraction. Now if the angle *a b c* be varied to any degree, the sine *s i* will always be in the same proportion to the sine of refraction *p r*. If the dense medium is water, the sine *p r* will be three-fourths of *s i*. When glass is used the sines are as 2 to 3 nearly, and in diamond as 2 to 5.

397. When a ray is passing out of a dense medium into a rarer, the direction will be changed, and the ray *b f* will now be bent further from the perpendicular, so as to make the sines the reverse of the former case. Out of water they will be as 4 to 3; from glass as 3 to 2, and from diamond as 5 to 2. The theorems just described for finding the foci of lenses are called geometrical, and will be nearly the same as the refracted, when the lens is made of plate-glass. The refracted focus is only $\frac{1}{4}$ st part less than the geometrical, when ascertained by accurate experiment. The refracted focus of lenses of other media may be obtained by dividing the geometrical focus by the quotient obtained when the sine of incidence (*i*), minus the sine of refraction (*r*), is divided by half the sine of refraction. $\left(\frac{i - r}{\frac{1}{2} r}\right)$

398. Convex lenses, in their simple state, have been applied to collect the heat of the sun's rays for purposes similar to that of burning mirrors. One of the largest lenses that have been mounted for these purposes was that made of flint glass by Mr. Parker. This lens was three feet in diameter, and, when mounted, exposed a surface of 330 square inches to the sun's light; its focal distance was three feet nine inches, and the diameter of the circular spot of light was one inch. But, in order that the light might be condensed as much as possible, he employed another lens

sure the different radii of double and triple achromatic object-glasses.

thirteen inches diameter, and of twenty-nine inches focus, so as to decrease the diameter of the focal point to three-eighths of an inch. The apparatus on which it was mounted is shown in fig. 7: *a* is the large convex lens mounted in a ring, and connected to the smaller lens *b* by wooden ribs *c, c*; the lower rib has a piece *e* attached to it, capable of adjustment to or from the smaller lens: to this bar is fixed the holder *d*, having a universal joint. On this holder the substance to be experimented on is placed. The following are some of its effects on bodies placed in its focus; twenty grains of pure gold were fused in four seconds; ten grains of platina fused in three seconds; and a diamond, weighing ten grains, exposed for thirty minutes, lost four grains. This lens, which is now in the possession of the emperor of China, cost £700.

399. In large burning lenses the weight of the glass employed becomes of considerable importance; and, to effect as great a saving as possible, count Buffon has proposed to construct them of circular rings, as shown in fig. 8, where the lens is composed of three pieces, two rings, *a* and *b*, and a lens *c*. When, however, the size is very great, the rings may be composed of several pieces, as shown by the front view *E*, where the lens is built of ten pieces. These instruments have been denominated by Dr. Brewster, who suggested this division, polyzonal lenses.

400. The following advantages of these lenses have been laid down by Dr. Brewster:—

1. The difficulty of procuring a mass of flint-glass proper for a solid lens of great dimensions is in this construction completely removed.

2. If impurities exist in the glass of any of the spherical segments, or if an accident happen to any of them, it can be easily replaced at a very trifling expense. Hence the spherical segments may be made of glass much more pure and free from flaws and veins than the corresponding portions of a solid lens.

3. From the spherical aberration of a convex lens, the focus of the outer portion is nearer the lens than the focus of the central parts, and therefore the solar light is not concentrated in the same point of the axis. This evil may, in a great measure, be removed in the present construction, by placing the different zones in such a manner that their foci may coincide.

4. A lens of this construction may be formed by degrees, according to the convenience and means of the artist. One zone, or even one segment, may be added after another, and at every step the instrument may be used as if it were complete, without the rest of the zone to which it belongs; and it will contribute, in the proportion of its area, to increase the general effect.

5. If it should be thought advisable to grind the segments separately, or two by two, a much smaller tool will be necessary than if they formed one continuous lens. But, if it should be reckoned more accurate to grind each zone by itself, then the various segments may be easily held together by a firm cement.

6. Each zone may have a different focal length, and may, therefore, be placed at different distances from the focal point, if it is thought proper.

401. When two lenses are mounted in a frame to fix before the eyes, they are denominated spectacles: the lenses are employed to render the objects before the wearer more distinct. The eye, which consists of a convex lens, called the crystalline lens, refracts the light proceeding from the object placed before it in the same manner as a convex glass: the image of the object is formed at the focus of the lens, where it is received on a screen at the back of the eye; this screen, called the retina, is an expansion of the optic nerve, which conveys the sensation of vision to the mind. As the crystalline lens of the eye will only produce distinct vision when the focus is thrown on the retina, it is obvious that, should any defect occur with respect to that organ, indistinct and imperfect vision will arise. Thus, if the lens of the eye is not of a proper convexity to bring the image on the screen, an indistinctness must ensue. This is the case when the lens through age has become flattened; the image will then be thrown beyond the retina, and thus convey an imperfect representation of the object to the mind. To obviate this defect, we must make the rays pass through a glass of sufficient convexity to assist the eye, and enable it to form the image at the required place, which is in this instance done by shortening the focal distance of the crystalline lens of the eye. If, on the contrary, the eye should be too convex, or shortsighted, as is often the case with young persons, then the image will not be formed at a sufficient distance from the lens of the eye to reach the retina, and thus imperfect vision of distant objects is produced. To remedy this defect concave lenses must be resorted to, in order to diverge the rays before they enter the eye, and thus lengthen the focus of the crystalline lens to form an image on the retina. When the eyes are not directed near the centre of the spectacle-glasses, the obliquity of their surface to the rays will be increased, so as to occasion a confused appearance of the object. A great portion of this confusion is removed in the spectacles now usually made, when compared with those formerly employed, whose size, being very large, augmented the imperfection; for it may be observed that, when objects are seen through spectacle-glasses, no more of the glass is employed at one view than a portion equal to the size of the pupil of the eye: this on an average may be reckoned at the eighth of an inch in diameter. Thus we see how small a portion is used for the purposes of vision; but as it would be tedious to require the eye always to look through a small aperture, the glasses are left of a sufficient size to admit of a moderate degree of motion; and, as we require a greater latitude horizontally than vertically, their figure is made of an oval form.

402. In the selection of spectacle glasses great care should be used in examining them, and the first point of importance is the goodness of the material of which they are formed; this should be free from all veins or small bubbles, for if one of these occur in the portion through which we look it will greatly impair the eyes. The next circumstance is the color of the glasses; the best adapted for general purposes is a pale blue. The figure of their surfaces should be perfectly spher-

rical; for if they are curved more in one direction than in another they will injure the sight, unless they are cylindrically formed, as for some particular disease. The polish should be clean, and free from flare, which too often arises from the manner in which they are usually polished on heterogeneous surfaces, producing what is technically termed a curdled glass.

403. Dr. Wollaston, in order to allow the eyes a considerable latitude without fatigue, invented a peculiar form of glasses, called by him periscopic, from two Greek words signifying seeing about; their form is that of a meniscus with the concave side always turned towards the eye. When they are intended for long-sighted persons, or old age, the anterior surface, or that next the object, is formed spherically convex, with a curve deeper than the concave, so as both to gain the required power, and compensate for the divergency occasioned by the concave side; this form is shown at A, fig. 9. The periscopic form employed for correcting the defect of a short or near sight is shown in section at B, having its anterior surface convex, as in the former case; but here the concavity on its posterior side is increased to procure the required divergency, and compensate for the convex side.

404. The calculation of an achromatic object-glass, and in general that of every achromatic telescope, requires a precise knowledge of the ratio of the sines of incidence and refraction, and of the ratio of dispersion of the different kinds of glass which are used in the composition of telescopes. The methods hitherto employed for measuring these ratios have given results differing considerably from each other, in spite of the care and accuracy employed in the computation. We ought, therefore, to expect inaccuracies, which render the perfection of the object-glass doubtful. Experiments, repeated during many years, have led M. Fraunhofer, of Munich, to discover new methods of obtaining these ratios. The following is the order in which he made those experiments:—

405. He began by determining the dispersion of the single kind of glass, from the size of the prismatic spectrum, formed by a prism of a given angle in a dark chamber, and at a given distance, and from this he deduced the dispersion. The ends of the spectrum, however, were ill terminated, and a considerable uncertainty was attached to the results.

406. In order to determine the ratio of the refraction and dispersion of flint and crown glass, M. Fraunhofer made use of prisms of these two kinds of glass, having their respective angles small, and placed in opposite directions. These last were then successively changed, till, on the one hand, the refrangibility, and on the other the refraction, was nothing. The ratio of the angles was then the inverse ratio of that of the refrangibility or the refraction. Several prisms, however, thus put together in pairs, gave different results, particularly for the dispersion. Hence, in order to determine the relative dispersion, he selects larger prisms, having their refracting angles also greater, and placed in opposite directions. The prism of crown-glass had an angle of from 60° to 70° . The angle of one of the prisms was changed till the dis-

persion was almost destroyed; and the little that remained was then corrected, by changing the angle of incidence of the ray. Since, in prisms with great angles, the light is totally reflected at the second surface, even by a small variation of the angle of incidence, he covered the two touching faces of the prisms with a strong refracting fluid, such as oil, and by this means the light was transmitted at almost all angles of incidence. He applied the two prisms before the object-glass of the telescope, and a repeating theodolite, having placed them upon a horizontal plane, with a steel axis, round which it moved. The box in which the axis turned was firmly united with the telescope, as shown in fig. 10. By this procedure he was enabled to measure exactly the angle of incidence at which the dispersion was destroyed. He first looked through the telescope across the prism, at a distant object, having its edges vertical and very distinct; he then changed the angle of incidence, by turning the plane upon which the prism rested, and the alidade of the theodolite, till the dispersion appeared to be very small, or rather till the vertical edges of the object were most distinct. In order to measure the angle of incidence, he had put upon the turning-plane a ruler, which carried two steel points that exactly touched the first surface of the prisms. On this ruler was fixed a telescope, a little elevated, whose axis was perfectly parallel to the two points of steel. See fig. 11. This telescope was fixed upon the ruler only by its two ends, so that, through the interstice between the telescope and the ruler, the light could freely fall upon the prisms. Hence it was easy to measure in this manner by the theodolite the angle of incidence. Knowing, therefore, this angle, and also the index of refraction, and the angles of the prisms, which can be obtained exactly by the same ruler of the theodolite, the ratio of dispersion could then be deduced by a very exact expression.

407. The observation made with two similar prisms agreed so well that, in an object-glass calculated after these data, there was no injurious aberration of color. But if, in determining the relative dispersion, we employ different pairs of prisms, formed of the same kind of glass, and having their angles different, the results present differences which might leave an uncorrected aberration injurious to object-glasses of considerable dimensions. This result conducted him to the following experiments:—

408. If we look at an object across two prisms of flint and crown-glass, with their refracting angles in opposite directions, particularly with a telescope, it will never appear without color. At a certain angle of the incident rays the dispersion is a minimum, and, either by increasing or diminishing this angle, the dispersion increases. The remaining dispersion arises, as is well known, from the different prismatic colors having a different ratio of dispersion in the two kinds of glass. If, in crown-glass, for example, the dispersion of the red rays is to that of the same rays in flint-glass as ten to nineteen, then the violet rays may be dispersed in the ratio of ten to twenty-one. Hence, the two dispersions can never entirely compensate one another.

409. It would be of great importance to determine for every species of glass the dispersion of each separately-colored ray. But, since the different colors of the prism do not present any precise limits, the spectrum cannot be used for this purpose. More precision would be obtained if we possessed glasses or colored fluids which permitted only light of the same color to pass; the one, for example, permitting only the blue light to pass, and the other only the red. M. Fraunhofer was not, however, fortunate enough to procure either a glass or a fluid which possessed this property. In every case the white light which passed through was still decomposed into all its colors, with this difference only, that in the spectrum the color peculiar to the glass or the fluid was more brilliant than the rest. Even the colored flames obtained by burning alcohol, sulphur, &c., seen through a prism, do not yield a homogeneous light corresponding to the color. These flames, however, such as that of a lamp, particularly that of a candle, and, in general, the light produced by the flame of a fire, exhibit between the red and yellow of the spectrum a clear and well marked line, which occupies the same place in all the spectra. This line appears to be formed by rays which are not decomposed by the prism, and which consequently are homogeneous. In the green space we perceive a similar line, but it is weaker and less distinct, so that it is often very difficult to find.

410. It was, however, absolutely necessary for M. Fraunhofer to have homogeneous light of each color, and the following was the method which he employed:—Behind an aperture in a shutter, 1·5 of an inch wide and 0·07 wide, he placed a prism A, fig. 12, of flint-glass, with an angle of about 40°; and at B C, a distance of about thirteen feet, he placed six lamps, whose light fell through narrow apertures on the prism A. The width of these apertures was 0·05 of an inch, their height nearly 1·5, and the distance of one lamp from another 0·58. The light of the lamps which fell on the prism A was refracted by it, and decomposed into colors, and afterwards passed through the aperture in the shutter. From the lamp C, for example, the red rays came in the direction of E, and the violet in that of D. From the lamp B the red rays passed towards F, and the violet rays towards G, &c. At the window of another house, 692 feet from A, and at the same height of the plane B A C, he placed the theodolite already mentioned, before the telescope of which, on the horizontal plane, was set the prism H, whose index of refraction for the different colored rays he wished to determine. The prism H could only receive from the lamp C the red rays, the others, for example the violet, going to a side at D, did not fall upon the prism. In like manner, from the lamp B, it was only the violet rays which fell upon the prism H. In this way the prism relieved from each lamp rays of a different color, setting out from the same point. If the prism H, or the aperture of the object-glass, was not too broad, some rays of the six lamps, for example those between the violet and the blue, between the blue and the green, &c., will not fall upon the prism H, but will be entirely wanting. In this case the spec-

trum of rays passing by the small aperture A, and seen by the prism H, and by the telescope of the theodolite, will appear as in fig. 13, where I is the violet, K the blue, L the green, &c., and each color will appear separate. The distances ON, NM, &c., will increase as the dispersive power of the glass with the same angle of the prism H is greater. Since these distances, and the angle formed by the incident ray with an emergent ray, may be measured by the theodolite with a great degree of accuracy, it is easy, by means of this mechanism, to determine the index of refraction of each colored ray for every kind of refracting substance. Above the prism A, at the distance of one foot and a half, he made another aperture in the shutter, in the same vertical line with A, behind which he placed a lamp, from which the prism H likewise received light. The spectrum produced by the lamp ought then to appear by the prism before the telescope of the theodolite, and below the colored points as P, R, Q. The shining orange or reddish line which appears in every spectrum of the light of the fire is shown at R. This line enables us, in the present case, to be certain that, on different days of observation, we have always the same color in the colored points, which would not take place if the table on which the lamps are placed suffer the least change in relation to the prism. On this account we ought to place the table so that the point N may always be found in the same vertical line with R. When this is not the case it is easy to bring it to the position by the adjusting-screws B and C. Since the distance of the lamps, or rather that of the small apertures by which the light falls on the prism A is invariable, we are sure, on different days of observation, to have always the same color in the colored points.

411. The distances of some of these colored points, for example the violets, the blues, and the reds, whose light is weak, cannot be measured without illuminating the micrometer wires of the telescope. These colored points, however, lose, by the ordinary method of illuminating the field, as much light as the wires receive, and therefore this method cannot be employed. It was necessary, therefore, to have a mechanism by which the wires alone could be illuminated, while the rest of the field remained dark. Such a mechanism M. Fraunhofer applied to his micrometer. The illuminating of the wires may thus be modified at pleasure, and always with facility. This is effected on the side of the eye-glass by means of a small lamp enclosed in a hollow globe, from which the light falls upon a lens, and throws it in a parallel manner on the wires. At the inner margin of the eye-glass, constructed for the purpose, the rest of the incident light is absorbed without falling on the lens. With this apparatus he has measured the angles of refraction of the different colored rays for several refracting substances, the results of which are given in the following table. With all the substances the angle of the incident ray is equal to the angle of the emergent ray N. Each angle was measured four times. Since the light which sets out from A does not fall in a parallel manner on the prism H; or rather, since the plane in which the prism H is placed is not in the axis of the theodolite,

but at its centre is distant from the axis 4.25 inches, it was necessary to apply a small correction to the angle that the incident ray makes with the emergent ray N. The distance of A from H

being 692 feet, the correction for the prism of flint-glass is + 31', for that of crown-glass + 40', and for water 40', &c. The angles LM, NM, &c., do not require this correction.

| Refracting Media. | Temp. Reau- mur. | Specific Gravity. | Angle of the Prism. | Angle of De- viation, or of N. | See Fig. 12. | | | | |
|--|------------------------|----------------------|------------------------|--------------------------------------|--------------|-------|-------|-------|-------|
| | | | | | ON | NM | NL | NK | NI |
| Crown glass, No. 9. | 3 | 2.535 | 39 20 35 | 22 38 20 | 6 11 | 5 46 | 11 22 | 16 56 | 22 16 |
| Flint glass, No. 13. | 5½ | 3.723 | 26 24 30 | 17 27 9 | 7 17 | 7 15 | 14 18 | 21 31 | 28 46 |
| Water | 8 | 1.000 | 58 5 40 | 22 36 41 | 6 35 | 6 19 | 12 9 | 17 45 | 23 18 |
| Water | 9½ | 1.000 | 58 5 40 | 22 36 43 | 6 30 | 6 12 | 12 5 | 17 43 | 23 10 |
| Sulphuric acid | 9½ | 1.841 | 58 5 40 | 29 27 47 | 7 50 | 7 15 | 14 3 | 20 30 | 26 45 |
| Alcohol | 9 | 0.809 | 58 5 40 | 25 8 32 | 6 35 | 6 17 | 12 55 | 18 45 | |
| Vitriolic ether | 9 | | 58 5 40 | 24 38 39 | 6 20 | 6 27 | 12 55 | 19 10 | |
| Sulphuric ether | 9 | | 58 5 40 | 24 38 39 | 6 20 | 6 27 | 12 55 | 19 10 | |
| Oil of turpentine . . . | 7 | 0.885 | 58 5 40 | 33 22 8 | 11 00 | 11 35 | 22 45 | 34 20 | |
| Kali dissolved in water | 8½ | 1.416 | 58 5 40 | 27 45 54 | 8 32 | 7 58 | 15 35 | 23 6 | 30 24 |
| One part sugar of lead, three parts water . . . | 8½ | | 58 5 40 | 24 34 49 | 7 54 | 7 31 | 14 47 | 21 40 | 28 22 |
| Oil of turpentine . . . | 8½ | 0.885 | 58 5 40 | 33 20 8 | 11 51 | 11 32 | 22 45 | 33 56 | 44 50 |

412. In the following table we have given the indices of refraction for the different colored rays in flint glass, crown glass, and water, which

have been computed from the observed angles, calling O_n the index of refraction for the ray O, and N_n that for the ray N, &c.

| Refracting Media. | O_n | N_n | M_n | L_n | K_n | I_n |
|----------------------|---------|---------|---------|---------|---------|---------|
| Flint glass, No. 13. | 1.63074 | 1.63505 | 1.63933 | 1.64349 | 1.64775 | 1.65203 |
| Crown glass, No. 9. | 1.52736 | 1.52959 | 1.53173 | 1.53380 | 1.53586 | 1.53783 |
| Water | 1.33209 | 1.33359 | 1.33501 | 1.33635 | 1.33763 | 1.33888 |

413. From these data there results the ratio of the dispersion of the different colored rays for these refracting media, as is shown in the follow-

ing table, where O_n' , N_n' , &c., are the indices of refraction from the substances that have the strongest dispersion.

| Refracting Media. | $N_n' - O_n'$ | $M_n' - N_n'$ | $L_n' - M_n'$ | $K_n' - L_n'$ | $I_n' - K_n'$ |
|-------------------------|---------------|---------------|---------------|---------------|---------------|
| | $N_n' - O_n'$ | $M_n' - N_n'$ | $L_n' - M_n'$ | $K_n' - L_n'$ | $I_n' - K_n'$ |
| Flint glass, No. 139. } | 1.93 | 2.00 | 2.01 | 2.07 | 2.17 |
| Crown glass, No. 9. } | | | | | |
| Flint glass, No. 139. } | 2.87 | 3.01 | 3.10 | 3.33 | 3.42 |
| Water } | | | | | |
| Crown glass, No. 93. } | 1.49 | 1.51 | 1.55 | 1.61 | 1.58 |
| Water } | | | | | |

414. From these results it is obvious that there are great anomalies in the ratio of the dispersion of the differently-colored rays in some refracting media.

415. These experiments led him to make some observations on the influence of heat upon the refraction of fluids. By the least change of temperature, the refraction of all fluids becomes stronger in the lower part of the prismatic spectrum than it is in the upper part: and hence every fluid acquires a kind of undulation, which prevents the colored points of the spectrum from being precisely distinguished. In making these experiments during the night, when the temperature continually changes, M. Fraunhofer was

obliged to stir the fluid every five or ten minutes, in order to render it homogeneous. These differences are not great in water, but in other fluids they are so considerable that all the spectrum is dispersed and confounded, even if the vessel is shut up from the air. Hence it follows that we ought not to expect good object-glasses by substituting fluids in place of flint-glass. We see also, from these experiments, how difficult it must be to melt flint and crown glass of a perfect homogeneity, since in every furnace of a glass-house the heat of the upper part of the crucible is almost one-third stronger than that of the lower part.

416. In order to obtain the indices of refrac-

tion of the differently-colored rays with more exactness, and in order to determine if the action which refracting substances exert upon the light of the sun is the same as upon artificial light, he adopted the following method :—

417. Into a dark room and through a narrow vertical aperture in the window-shutter, about 15" broad, and 36" high, he introduced the rays of the sun upon a prism of flint-glass placed upon the theodolite. This instrument was twenty-four feet from the window, and the angle of the prism was nearly 60°. The prism was placed before the object-glass of the telescope, so that the angles of incidence and emergence were equal. In looking at this spectrum for the bright line, which he had discovered in a spectrum of artificial light, he discovered, instead of this line, an infinite number of vertical lines of different thicknesses. These lines are darker than the rest of the spectrum, and some of them appear entirely black. When the prism was turned, so that the angle of incidence increased, these lines disappeared; and the same thing happened when the angle was diminished. If the telescope was considerably shortened, these lines re-appeared at a greater angle of incidence; and, at a smaller angle of incidence, the eye-glass required to be pulled much farther out, in order to perceive the lines. If the eye-glass had the position proper for seeing distinctly the lines in the red space, it was necessary to push it in to see the lines in the violet space. If the aperture by which the rays entered was enlarged, the finest lines were not easily seen, and they disappeared entirely when the aperture was about 40". If it exceeded a minute the largest lines could scarcely be seen. The distances of these lines and their relative proportions suffered no change, either by changing the aperture in the shutter, or varying the distance of the theodolite. The refracting medium of which the prism is made, and the size of its angle, did not prevent the lines from being always seen. They only became stronger or weaker, and were consequently more or less easily distinguished in proportion to the size of the spectrum. The proportion even of these lines to one another appeared to be the same for all refracting substances; so that one line is found only in the blue, another only in the red, and hence it is easy to recognise those which we are observing. The spectrum, formed by the ordinary and extraordinary pencils of calcareous spar, exhibit the same lines. The strongest lines do not bound the different colors of the spectrum; for the same color is almost always found on both sides of a line, and the transition from one color to another is scarcely sensible.

418. Fig. 14, shows the spectrum with the lines such as they are actually observed. It is, however, impossible to express on this scale all the lines and the modifications of their size. At the point A the red nearly terminates, and the violet at I. On either side we cannot define with certainty the limits of these colors, which, however, appear more distinctly in the red than in the violet. If the light of an illuminated cloud falls through the aperture on the prism,

the spectrum appears to be bounded on one side between G and H, and on the other at B. The light of the sun, too, of great intensity, and reflected by a heliostat, lengthens the spectrum almost one-half. In order, however, to observe this great elongation, the light between C and G must not reach the eye, because the impression of that which comes from the extremities of the spectrum is so weak as to be extinguished by that of the middle of the spectrum. At A, we observe distinctly a well-defined line. This, however, is not the boundary of the red, which still extends beyond it. At *a* there is a mass of lines, forming together a band darker than the adjacent parts. The line at B is very distinct, and of a considerable thickness. From C to D may be reckoned nine very delicate and well-defined lines. The line at C is broad, and black like D. Between C and D are found nearly thirty very fine lines, which, however, with the exception of two, cannot be perceived but with a high magnifying power, and with prisms of great dispersion; they are besides well-defined. The same is the case with the lines between B and C. The line D consists of two strong lines, separated by a bright one. Between D and E we recognise about eighty-four lines of different sizes. That at E consists of several lines, of which the middle one is the strongest. From E to *b* there are nearly twenty-four lines. At *b* there are three very strong ones, two of which are separated by a fine and clear line. They are among the strongest in the spectrum. The space *b* F contains nearly fifty-two lines, of which F is very strong. Between F and G there are about 185 lines of different sizes. At G many lines are accumulated, several of which are remarkable for their size. From G to H there are nearly 190 different lines. The two bands at H are of a very singular nature. They are both nearly equal, and are formed of several lines, in the middle of which there is one very strong and deep. From H to I they likewise occur in great numbers. Hence it follows that in the space B H there are 574 lines, the strongest of which are shown in the figure. The relative distances of the strongest lines were measured with the theodolite, and placed in the figure from observation. The faintest lines only were inserted from estimation by the eye.

419. Various experiments and changes, to which M. Fraunhofer has submitted these lines, convinces him that they have their origin in the nature of the light of the sun, and that they cannot be attributed to illusion, to aberration, or any other secondary cause. In transmitting the light of a lamp through the same aperture, we observe only the light shown at R, in fig. 13. It occupies, however, exactly the same place as D in fig. 14; so that the index of refraction of the line D is the same as that of R.

420. It is easy to understand why the lines are not well marked, and why they disappear, if the aperture of the window becomes too large. The largest lines occupy nearly a space of from 5" to 10". If the aperture is not such that the light which passes through it cannot be regarded as a single ray, or if the angle of the width of the

aperture is greater than that of the width of the line, then the image of the same line will be projected several times parallel to itself, and will consequently become indistinct, and disappear when the aperture is too great. The reason why, in turning the prisms, we cease to see the lines, unless the telescope is lengthened or shortened, may be thus explained:—

421. The emersion of the rays, in respect to their divergence, is similar to their immersion only in the case where the angles of incidence and emergence are equal. If the first angle is greater, the rays after refraction will diverge, as it were, from a more distant point, and, if it is smaller, from a nearer point. The reason of this is, that the path of the rays which pass nearer the vertex of the prism is shorter than that of those which pass at a greater distance from the vertex. Hence the angles of the refracted rays are not changed, but the sides of the triangles for the emergent rays ought to be in the one case greater, and in the other smaller. This difference ought to vanish if the rays fall in parallel directions on the prism, which is also proved by experiment. As the violet rays have, by the object-glass of the telescope, though a chromatic, a focal distance a little shorter than the red rays, we see clearly why it is necessary to displace the eye-glass, in order to perceive the lines distinctly in the different colors.

422. As the lines of the spectrum are extremely narrow, the apparatus must be very perfect, in order to avoid all aberration, by which the lines may be rendered indistinct, and even dispersed. The sides of the prism ought consequently to be perfectly plain, and the glass of which the prisms are made ought to have neither scratches nor striæ. With English flint-glass which is never entirely free of these striæ, we can only see the strongest lines. Common glass, and even the English crown-glass,

contains many striæ, though they are not always visible to the eye. Those who cannot procure a perfect prism of flint-glass should use a fluid of great dispersive power, such as oil of aniseed, in order to see all the lines. In this case, the prismatic vessel ought to have its sides perfectly plane and parallel. In general, the sides of all the prisms should form an angle of 90° with their base, and this base ought to be placed horizontally before the telescope, if the axis of the telescope is horizontal. The narrow aperture by which the light passes ought to be exactly vertical. The reason why the lines become indistinct, if any of the conditions now mentioned is neglected, may now be readily understood.

423. As the lines of the spectrum are seen with every refracting substance of uniform density, M. Fraunhofer has employed this circumstance for determining the index of refraction of any substance for each colored ray. This could be done with the greater exactness, as most of the lines are very distinct and well marked. For this purpose he selected the largest lines, because with substances of low refractive power, or with prisms of small refracting angles, the lines of less magnitude could scarcely be perceived with a strong magnifying power. The lines which he preferred were those marked B, C, D, E, F, G, H, in fig. 14. He made no use of the line *b* because it is too near F, and he endeavoured to use the middle one between D and F. It is not practicable to measure larger arcs, such as B H, but only small ones like B C, C D, because, in order to see the lines of the different colors distinctly, the eye-glass requires to be displaced.

424. The following table contains the measures of the angles obtained from different kinds of glass, and other refracting substances:—

| refracting media. | Temperature. Reaumur. | Sp. Gr. | Angle of the prism. | Angle of deviation. | B C | C D | D E | E F | F G | G H |
|-----------------------------|--------------------------|------------|------------------------|------------------------|---------|---------|---------|---------|-----------|---------|
| | ° | | ° ' " | ° ' " | " " | " " | " " | " " | ° ' " | ° ' " |
| Flint glass, No. 13. | 15 | 3.723 | 26 24 30 | 17 27 8 | 3 16 | 9 4.2 | 11 50 | 10 33.9 | 20 23.9 | 18 18 |
| Crown glass, No. 9. | 14 | 2.535 | 39 20 35 | 22 38 19 | 2 44.5 | 7 23.5 | 9 14 | 8 14 | 15 10 | 13 18 |
| Water. | 15 | 1.000 | 58 5 40 | 22 36 40 | 3 24 | 8 10 | 9 58 | 8 38 | 15 16 | 12 41.9 |
| Water. | 15 | 1.000 | 58 5 40 | 22 36 40 | 3 12.4 | 8 10.6 | 9 57.5 | 8 30.5 | 15 15.6 | 12 46.2 |
| Kali dissolved in water. | 9 | 416.58 | 5 40 | 27 45 56 | 4 2 | 10 26 | 12 54 | 11 12 | 20 36 | 17 24 |
| Oil of Turpentine. | 8½ | 0.885 | 58 5 40 | 33 20 12 | 4 56 | 13 52 | 18 46.1 | 16 14 | 31 8 | 27 28 |
| Flint glass, No. 3. | | 3.512 | 27 41 35 | 17 35 16.6 | 3 8 | 8 22 | 10 46 | 9 50 | 19 10 | 17 10 |
| Flint glass, No. 30. | | 3.695 | 21 42 15 | 14 3 9 | 2 35.6 | 6 56.8 | 9 12.6 | 8 19 | 16 15.6 | 14 32.2 |
| Crown glass No. 13. | | 2.535 | 43 27 36 | 25 26 35.4 | 3 5 | 8 14.4 | 10 28.2 | 9 10 | 17 14.8 | 14 48.4 |
| Crown glass, M. | | 2.756 | 42 56 40 | 26 39 13 | 3 32.8 | 9 37.6 | 12 29.8 | 11 1.6 | 20 53.6 | 18 17.4 |
| Flint glass, No. 23. | | 3.724 | 60 15 42 | 49 55 13.2 | 11 12.6 | 31 14.8 | 41 21.4 | 38 14.8 | 1 14 45.2 | 1 8 3.6 |
| Flint glass, No. 33. | | 3.724 | 45 23 14 | 32 45 12.2 | 6 26 | 17 47.8 | 23 31.8 | 21 23.8 | 41 33.4 | 37 28.8 |

425. The following table contains the indices of refraction for the different colored rays in each refracting substance :—

| Refracting media. | B n. | C n. | D n. | E n. | F n. | G n. | H n. |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Flint glass, No. 13. | 1·627749 | 1·629681 | 1·635036 | 1·642024 | 1·648260 | 1·660285 | 1·671062 |
| Crown glass, No. 9. | 1·525832 | 1·526849 | 1·529587 | 1·533005 | 1·536052 | 1·541657 | 1·546566 |
| Water | 1·330935 | 1·331712 | 1·333577 | 1·335851 | 1·337818 | 1·341293 | 1·344177 |
| Water | 1·330977 | 1·331709 | 1·333577 | 1·335849 | 1·337788 | 1·341261 | 1·344162 |
| Kali | 1·399629 | 1·400515 | 1·402805 | 1·405632 | 1·408082 | 1·412579 | 1·416368 |
| Oil of Turpentine . . | 1·470496 | 1·471530 | 1·474434 | 1·478353 | 1·481736 | 1·488198 | 1·493874 |
| Flint glass, No. 3. . . | 1·602042 | 1·603800 | 1·608494 | 1·614532 | 1·620042 | 1·630772 | 1·640373 |
| Flint glass, No. 30. . | 1·623570 | 1·625477 | 1·630585 | 1·637356 | 1·643466 | 1·655406 | 1·666072 |
| Crown glass, No. 30. . | 1·524312 | 1·525299 | 1·527982 | 1·531372 | 1·534337 | 1·539908 | 1·544684 |
| Crown glass, M. . . . | 1·554774 | 1·555933 | 1·559075 | 1·563150 | 1·566741 | 1·573535 | 1·579470 |
| Flint glass, No. 23 } Prism of 60°. } Flint glass, No. 23 } Prism of 45°. } | 1·626596 1·626564 | 1·628469 1·628451 | 1·633667 1·633666 | 1·640495 1·640544 | 1·646756 1·646780 | 1·658848 1·658849 | 1·669686 1·669680 |

426. The following table contains the ratios of the different dispersive powers of the differently colored rays, in several combinations of the re-

fracting substances, according to the results in the preceding table :—

| Refracting media. | C n'—B n' | D n'—C n' | E n'—D n' | F n'—E n' | G n'—F n' | H n'—G n' |
|---|-----------|-----------|-----------|-----------|-----------|-----------|
| | C n—B n | D n—C n | E n—D n | F n—E n | G n—F n | H n—G n |
| Flint glass, No. 13, and water. | 2·562 | 2·871 | 3·073 | 3·193 | 3·460 | 3·726 |
| Flint glass, No. 13, and crown glass, No. 9 | 1·900 | 1·956 | 2·044 | 2·047 | 2·145 | 2·195 |
| Crown glass, No. 9, and water. | 1·349 | 1·468 | 1·503 | 1·560 | 1·613 | 1·697 |
| Oil of turpentine and water. | 1·371 | 1·557 | 1·723 | 1·732 | 1·860 | 1·963 |
| Flint glass, No. 13, and oil of turpentine | 1·868 | 1·844 | 1·783 | 1·843 | 1·861 | 1·899 |
| Flint glass, No. 13, and Kali. | 2·181 | 2·338 | 2·472 | 2·545 | 2·674 | 2·844 |
| Kali and water | 1·175 | 1·228 | 1·243 | 1·254 | 1·294 | 1·310 |
| Oil of Turpentine and Kali. | 1·167 | 1·268 | 1·386 | 1·381 | 1·437 | 1·498 |
| Flint glass, No. 3, and crown glass, No. 9 | 1·729 | 1·714 | 1·767 | 1·808 | 1·914 | 1·956 |
| Crown glass, No. 13, and water. | 1·309 | 1·436 | 1·492 | 1·518 | 1·604 | 1·651 |
| Crown glass, M, and water. | 1·537 | 1·682 | 1·794 | 1·839 | 1·956 | 2·052 |
| Crown glass, M, and crown glass, No. 13. | 1·174 | 1·171 | 1·202 | 1·211 | 1·220 | 1·243 |
| Flint glass, No. 13, and crown glass, M. | 1·667 | 1·704 | 1·715 | 1·737 | 1·770 | 1·816 |
| Flint glass, No. 13, and crown glass, M. | 1·517 | 1·494 | 1·482 | 1·534 | 1·579 | 1·618 |
| Flint glass, No. 30, and crown glass, No. 13. | 1·932 | 1·904 | 1·997 | 2·061 | 2·143 | 2·233 |
| Flint glass, No. 23, and crown glass, No. 13. | 1·904 | 1·941 | 2·022 | 2·107 | 2·168 | 2·268 |

427. The preceding table shows the difference of dispersion relative to differently-colored rays for each combination of refracting substances. For example, for flint-glass, No. 13, and water, the ratio of dispersion of the rays in the space BC is as 1 to 2·56; and of the space GH as 1 to 3·73. As these differences, however, are very small in some substances, as in flint-glass and oil of turpentine, we may expect, with some confidence, that, in varying the ingredients, we may obtain a kind of glass, in which the differences will be smaller than in that which has hitherto been employed. The crown-glass M, for example, is of such a composition.

428. Calling 1 the aberration of an object-glass of crown-glass, No. 9, and flint-glass, No.

3, produced by the difference of dispersion relative to the different colors, this aberration becomes about 0·57 for an object-glass of the same focus, and composed of crown-glass, No. 9, and flint-glass, No. 13, and 1·74 with crown-glass, No. 9, and crown-glass M. In calculating these aberrations, he has taken into account the relative intensities of the differently-colored rays, of which we have already spoken.

429. The results given by two prisms of flint-glass, No. 23, show the degree of confidence which may be placed in the measured angles. With the prism of 45° made of this glass, a change of an arc of 2" produces a change of one in the fifth decimal of the index of refraction. With a prism of 60° it requires an angular

change of 8.5" to produce the same variation in the decimal.

430. If, in achromatic object-glasses, the aberration produced by the unequal refrangibility of the differently-colored rays ought to be destroyed; then, since the focal lengths of the lenses of flint and crown-glass ought to be nearly in the ratio of the dispersion of the two kinds of glass; and since, on the other hand, the ratio of dispersion for the different colors is not the same, it is evident that some aberration must still remain; and we must, therefore, determine this ratio, in order that this aberration may be a minimum for the distant vision of objects. This cannot take place, if the difference between the focal lengths for the rays of different refrangibility in the same object-glass is a minimum; for the different colors have not the same intensity: the aberration of the yellow rays, for example, which have the greatest brightness, will produce in the ratio of their intensity a worse effect than the violet ones, if the aberration for the latter is of the same magnitude. Hence we must know the intensity of each color in the spectrum, or in what ratio the impression of any color of the spectrum is stronger or weaker than that of another color. In order to measure this intensity, M. Fraunhofer constructed the following apparatus.

431. To an eye-glass, constructed for that purpose, for the telescope of the theodolite, he applied a small plain metallic mirror, the edge of which being well defined, cut the field of the telescope in the middle, as shown at *a* in fig. 15. It was placed before the eye-glass *E*, at an angle of 45°, and at the place of the image formed by the object-glass *A*. The eye-glass *E* is pulled out till the edge of the mirror, which ought to be vertical, is distinctly seen. At the side of the eye-glass, and in a direction perpendicular to the edge of the mirror *a*, and to the axis of the telescope *A E*, he fixed a tube *c B*, cut in the direction of its length at *b*; and in this cut he placed a narrower and a shorter tube *M N*, fig. 16, which crossed the larger tube *c B* perpendicularly. In this narrow tube was a small flame, in the axis of the larger tube, which was supplied with oil from an external vessel. The narrow vertical tube *b*, fig. 15, or *M N* fig. 16, had in the axis of the larger tube a small round aperture, turned towards the mirror *a*, by which the light of the flame fell upon it. By this contrivance, we perceive, in half of the field, the mirror *a* illuminated by the flame, and in the other half one of the colors of the spectrum formed by a prism placed before the object-glass *A*. The nearer the tube *b* is brought to *a*, the more will the flame illuminate the mirror,

and consequently we can obtain, at the same time, an impression produced on the eye by the light of the mirror (as seen by the eye-glass) of the same intensity as that which is produced by a color of the spectrum in the other half of the field. The squares of the distances of the flame from the mirror, for the different colors of the spectrum, are then inversely as the ratios of their intensity. Though at first it appears difficult to compare the light of two different colors, yet it becomes easy by a little practice. The intensity of the light of the mirror approaches more to that of any color in the spectrum, if, at the same position of the eye-glass, its vertical margin is less distinct. If the mirror is adjacent to a part of the spectrum, more or less illuminated, the edge of the mirror becomes, in both cases, more distinct; because, in the first case, the mirror appears to be placed in the shadow, and, in the second case, it is the color of the spectrum that is found there. The experiment with the mirror is a little difficult and uncertain, if we perceive clearly the lines of the spectrum, because the brightest and the darkest lines touch one another almost in every color. On this account the aperture in the window-shutter is made so broad that only the strongest lines are just visible, and the fine ones not at all. In place of the mirror outside of the shutter, by which the light entered, he put a white plane surface illuminated by the sun, because by any imperfection of the mirror the light is irregularly dispersed, which renders the observations more dubious.

432. In order to vary the experiments, he at one time enlarged the round aperture before the flame, and at other times contracted it. He placed at the end *c* of the wide tube, a piece of ground glass, through which the mirror received its light. In this case he measured the distances of the flame from the ground glass. To avoid all illusion the aperture before the eye-glass ought to be small, and to be at the place where the principal rays, or the axes of the rays coming from the edge of the field, cut the axis of the telescope. With the prism of flint-glass, No. 13, having an angle of 26° 24' 5", he obtained the following results. Though the experiments were made in clear weather, and at noon, he sometimes perceived, in the course of the observations, a slight change in the density of the light which the prism received. The differences of the four sets of experiments may have been partly owing to this change, and the flame may also have changed its intensity in the course of the observations. If we call the intensity of the light at the brightest part of the spectrum 1, we shall then have—

| Experiment I. | Experiment II. | Experiment III. | Experiment IV. | Mean of four Experiments. |
|------------------------|----------------|-----------------|----------------|---------------------------|
| Intensity of Light. | Int. of Light. | Int. of Light. | Int. of Light. | Int. of Light. |
| At B = 0.010 | 0.044 | 0.533 | 0.020 | 0.032 |
| At C = 0.048 | 0.096 | 0.15 | 0.084 | 0.094 |
| At D = 0.61 | 0.59 | 0.72 | 0.62 | 0.64 |
| Between D and E = 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| At E = 0.44 | 0.38 | 0.61 | 0.49 | 0.48 |
| At F = 0.084 | 0.14 | 0.25 | 0.19 | 0.17 |
| At G = 0.010 | 0.029 | 0.053 | 0.032 | 0.031 |
| At H = 0.0011 | 0.0072 | 0.0090 | 0.0050 | 0.00056 |

433. The brightest part of the spectrum is nearly at one-third or one-fourth of DE from D. Its position cannot be determined more exactly, nor is it of any great importance.

434. The curve in fig. 14 represents the intensity of the light in the different colors. The above values are the ordinates, and the measured arcs BC, CD, in the table containing the measures of the angles obtained from different kinds of glass, &c., from flint-glass, No. 13, the abscissæ. We may suppose that the quantity of the light in the different colored spaces is represented by the areas of the curve BC, CD. If we call this quantity 1, for the area of the space DE, then we shall have—

| | |
|------------|---------|
| Area of BC | = 0.021 |
| CD | = 0.299 |
| DE | = 1.000 |
| EF | = 0.328 |
| FG | = 0.185 |
| GH | = 0.035 |

435. Having several object-glasses of the same aperture, the same focal length, and the same kind of glass, we may determine in which of them the aberration produced by unequal refrangibility is the best compensated, if we cover one-half of each of them by a screen passing through the centre of the object-glass in a straight line. In those where the margin of a distant object is most distinct the aberration is best compensated. In making this comparison we must attend only to the distinctness of the object, and not be deceived by the colors, because one object-glass may show less color than another, and yet its distinctness be less. This detailed method of finding the best ratio of dispersion is useful only for determining how much the aberration of the faintest rays ought to exceed that of the brightest rays. This result will be still more accurate if it is obtained by trials made with greater object-glasses, whose apertures are in the ratio of the greatest possible focal length. It is scarcely necessary to add, that the aberration of sphericity was corrected in all the object-glasses employed in these experiments. There is still another aberration which takes place in the eye itself, and to which we ought to pay attention if we wish to find the best ratio of the colorific dispersion.

436. On placing the red color of the spectrum in the middle of the field of the telescope of the theodolite, and on adjusting the eye-glass so as to be able to distinguish the fine micrometer wires, these wires will be no longer seen when the violet rays enter the field, the eye-glass remaining fixed. In order to see the wire in this color, we must bring the eye-glass much nearer the wire; that is, more than double the aberration produced by the unequal refrangibility of the two kinds of rays in the eye-glass. This proves that the differently colored rays in the eye have not the same focal distance, and that the eye is not achromatic. The distance to which the eye-glass ought to be displaced in different colors, in order to see the wire distinctly, enables us to calculate this aberration of the eye, which is by no means small; but we must take into account the aberration produced by the eye-

glass itself. It is scarcely necessary to state, that, in observations of this kind, no other light but that of the spectrum ought to enter into the field of the telescope, and that the wire should not receive any foreign light. M. Fraunhofer has found, with a lens of crown-glass, No. 13, with a focus of 0.88 Paris inches, that the eye-glass, in passing the wire from the ray C to G, ought to be displaced 0.054 of an inch, in order to see the wire with equal distinctness in both colors. A lens of crown-glass, No. 13, of 1.33 Paris inches focus, requires to be displaced 0.111 for the same colors; a lens of flint-glass, No. 30, with a focus of 0.867, requires a displacement of 0.074; and another of flint-glass, No. 30, and a focus of 1.338, required to be displaced 0.148 of an inch. In these experiments he looked with one eye at a fixed object, whilst with the other he observed at the wire through the lens, in order that he might be certain that, with the different colored rays, the eye was always equally susceptible of uniting on the retina white rays of a given divergency; and, consequently, that it did not change, in that respect, for the different colors. Even with that precaution, however, the results did not differ greatly from the preceding.

437. The result given by the first lens is, that, if the red rays fall parallel on the eye, the blue rays ought to diverge from a point 23.7 inches distant, in order to have in the eye the same focal distance. With the second lens this distance was 21.3; with the third 19.5; and with the fourth 17.9. In this calculation he has taken into account the influence produced on this displacement by the unequal refrangibility of the two kinds of rays in the lens. This aberration in the eye cannot be fixed more rigorously, but by varied and repeated trials. It would be desirable to have the experiments repeated on the eyes of different persons in order to obtain a mean result. In order to determine this aberration with still more precision, we must also take into account the diameter of the luminous cylinder formed by the rays which go from the eye-glass to the eye. The diameter of this cylinder varies, and depends on the aperture of the object-glass, and the focus of the lenses of the eye-glass. It is easy to conceive that this aberration increases with the diameter of the cylinder. Great care is therefore requisite, in the calculation of object-glasses, to attend to the aberration of the eye, and to make it disappear from the object-glass.

438. If, in the calculation of achromatic object-glasses for the spherical aberration, we wish to make this aberration disappear entirely, the indices of refraction for the flint and crown-glass ought to belong to the same colored ray; for if these indices belong to different rays the aberration can never be extinguished, notwithstanding the most rigorous calculation. As the discovery of the lines on the spectrum enables us to determine these points with accuracy, they must be considered of great utility in removing this aberration.

439. Before the discovery of the lines in the spectrum, M. Fraunhofer determined the identity of the refracting powers of two kinds of

glass by cementing them together, and forming them into a single prism. If the two specula seen by this prism appeared on the same place, and without any reciprocal displacement, he concluded that their refracting power was the same. After the discovery of these lines, however, he found that two pieces of glass might still have a different refractive power, without that difference being perceived by the above method. This difference in refracting power was not only found in pieces of glass taken from different parts of the same crucible, but even in pieces taken from the two extremities of opposite sides of the same piece of glass. By repeated experiments on the manufacture of flint and crown glass, he has succeeded to such a degree, that in a crucible containing 400 lbs. of flint glass, two pieces, one of which was taken from the bottom, and the other from the top, have the same refractive power.

440. In observing the great quantity of lines in the solar spectrum, we might be led to believe that the inflexion of light at the narrow aperture in the window-shutter had some connexion with them, though the experiments described do not give the least proof of this, and, indeed, establish the contrary opinion. In order to put this beyond a doubt, and also to make some other observations, he varied the experiments in the following manner :—

441. If we make the sun's rays pass through a small round aperture in the window-shutter, nearly 15" in diameter, and cause it to fall on a prism placed before the telescope of the theodolite, it is obvious that the spectrum seen by the telescope can only have a very small width, and consequently will form only a line. In a line, however, of almost no breadth, it is impossible to see the fine and delicate lines which transverse it; and, on that account, the fixed lines are not seen in a spectrum of this kind. In order, however, to see all the lines in this spectrum, it is necessary only to widen it by an object-glass, without altering its length. He obtained this effect by placing against the object-glass a glass having one of its faces perfectly plane, and the other ground into a segment of a cylinder of a very great diameter. The axis of the cylinder was exactly parallel to the base of the prism. The spectrum could not, therefore, change in its length, and was therefore only widened. In the spectrum thus altered he recognised all the lines occupying the very same position that they had when the aperture was long and narrow.

442. He employed the same apparatus for examining in the night time the planet Venus, without allowing the light to fall upon a small aperture.

443. In the spectrum formed by this light he found the same lines, such as they appeared in the light of the sun. That of Venus, however, having little intensity compared with that of the sun reflected from a mirror; the brightness of the violet and the exterior red rays is very feeble. On this account we perceive even the strongest lines in these two colors with some difficulty; but in the other colors they are easily distinguished. M. Fraunhofer has seen the lines D, E, b, F, fig. 14, very well terminated; and

he has recognised that those in *b* are formed of two, namely, a fine and a strong line. The weakness of the light, however, prevented him from seeing that the strongest of these two lines consisted of two; and, for the same reason, the other finer lines could not be distinguished.

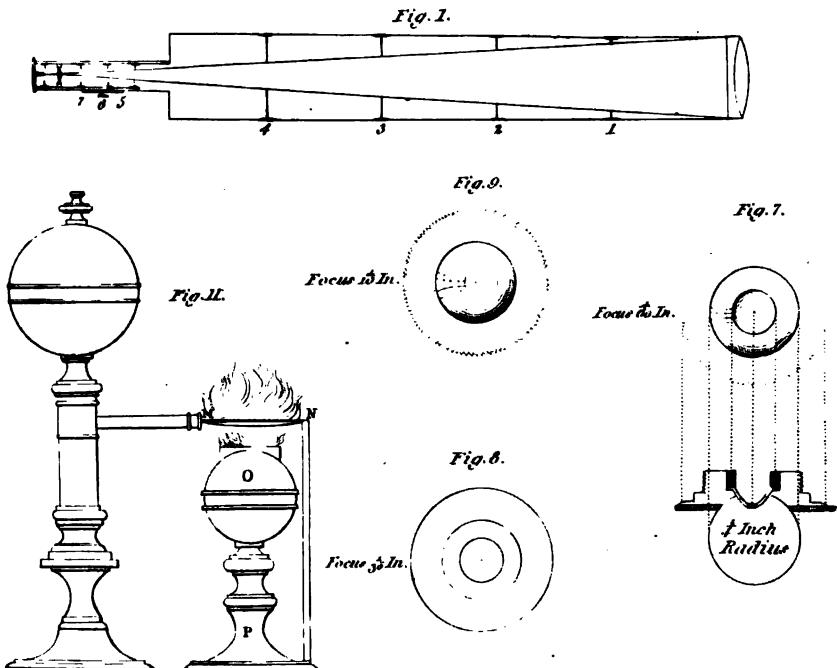
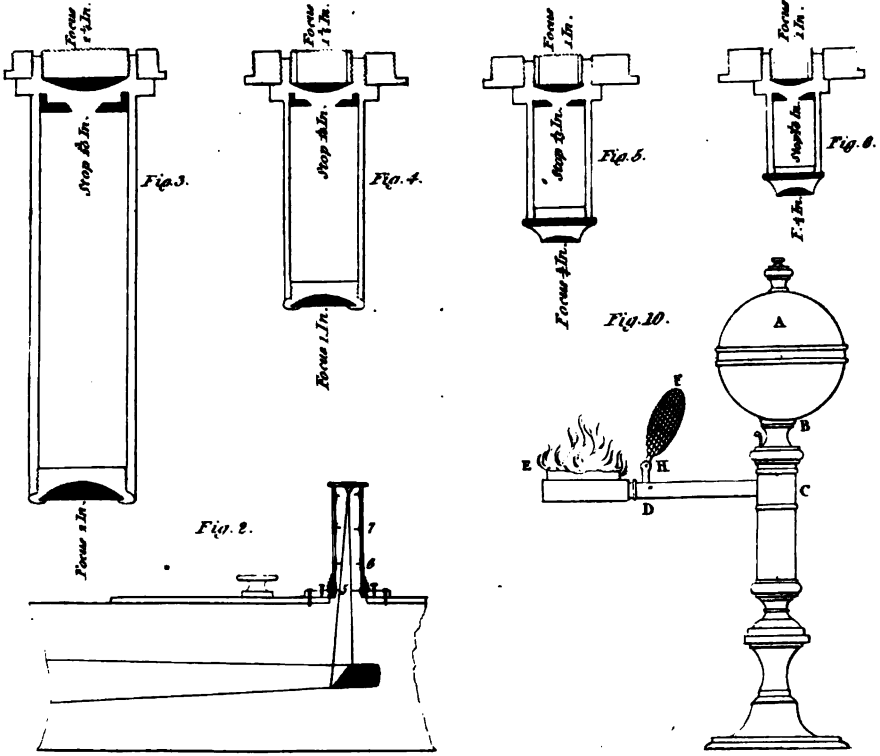
444. With the same apparatus he has also made several observations on some of the brightest fixed stars. As their light was much fainter than that of Venus, the brightness of their spectrum was consequently still less. He has nevertheless seen, without any illusion, in the spectrum of the light of Sirius, three large lines, which apparently have no resemblance with those of the sun's light. One of them is in the green, and two in the blue space. Lines are also seen in the spectrum of other fixed stars of the first magnitude; but those stars appear to be different from one another in relation to these lines. As the object-glass of the telescope of the theodolite has only thirteen lines of aperture, these experiments may be repeated, with greater precision, by means of an object-glass of greater dimensions.

445. The electric light is, in relation to the lines of the spectrum, very different from the light of the sun and of a lamp. In this spectrum we meet with several lines, partly very clear, and one of which, in the green space, seems very brilliant, compared with the other parts of the spectrum. Another line, which is not quite so bright, is in the orange, and appears to be of the same color as that in the spectrum of the light of a lamp; but, in measuring its angle of refraction, M. Fraunhofer finds that its light is much more strongly refracted, and nearly as much as the yellow rays of the light of a lamp. Towards the extremity of the spectrum we perceive in the red a line of very little brightness; yet its light has the same refrangibility as that of the clear line of the light of a lamp. In the rest of the spectrum we may still easily distinguish other four lines sufficiently bright.

446. In making the light of a lamp fall through a narrow aperture, from 15" to 30" wide, upon a prism of great dispersion, placed before the telescope, we perceive that the red line of this spectrum is formed by two very delicate bright lines, similar in size and in distance to the two dark lines D, fig. 14. Whether the aperture through which the light of the lamp passes is wide or narrow, if we cover the point of the flame, and the lower blue extremity of it, the red line appears less clear, and is more difficult to be distinguished. Hence it appears that this line derives its origin principally from the light of the two extremities of the flame, particularly the inferior one.

447. The reddish line is, in relation to the other parts of the spectrum, very bright in the spectra of light produced by the flame of hydrogen gas and alcohol. In the spectrum of the flame of sulphur it is seen with difficulty.

448. Optical instruments in general have within the last century been brought to so high a degree of perfection that it may almost be doubted if there remain any real improvement to be made in them; nevertheless Dr. Goring states, that in the humble part of their con-



struction which provides against the admission of false light, there is still left some capability of a farther advancement towards perfection, which may be effected with advantage, to the performance of astronomical refracting telescopes, Newtonian reflectors, and compound microscopes.—As it is necessary to understand the nature of an evil before we can remedy it, as well as to feel the utility of removing it, we shall here give a slight account of the indistinctness occasioned by fog.

449. When we look through a telescope admitting false light, at a printed bill, the plate of a clock, or other such object, especially if the day is clear, and the sun shines on it, we find, however perfect the instrument may be in other respects, the letters or figures do not appear so black and sharp as when viewed by the naked eye under the same angle, but rather of a brownish color; in other words, the effect upon the eye is similar to that of looking through a mist, or through glasses dimmed by moisture; in short, what an ordinary observer would express by saying, that the instrument did not shew objects clear and distinct. Now, on examining the pencil of rays proceeding from the eye-piece of such a telescope, with a magnifier, it will (supposing no other source of indistinctness exists), be found surrounded by a variety of foreign rays, forming different haloes above it, instead of appearing like a spangle on a piece of black cloth, which it will do when all the light is stifled, as in Gregorian and Cassagrain reflectors by their eye-hole, and in refractors with erecting eye-pieces, which have a stop between the two bottom glasses, producing the same effect, by suffering nothing but the true and genuine pencil of light, from the object-glass or metal, to reach the retina. Indeed, in these instruments, the quantity of spurious rays would be so great as absolutely to preclude any thing like distinct vision, without the stops and eye-holes in succession.

450. In those to which Dr. Goring proposes to apply an equivalent contrivance for extinguishing fog, though there may not be the same imperious necessity for its application, still he thinks the advantage to be gained by the improvement is not to be despised, but will rather be admitted to be highly useful and appropriate, as placing optical instruments one step nearer perfection than they otherwise would be, by producing the maximum of distinctness and clearness of vision, of which they can be rendered susceptible, consistently with their excellence in other respects. Opticians have not been entirely insensible to the advantages to be obtained by excluding all inefficient light; being aware that no kind of blacking, applied to the inside of an optical tube, is sufficient to effect that salutary purpose, they have had recourse to other means, though inadequate to the end in view. Thus it is common, in a refracting astronomical telescope, to meet with one stop and sometimes two, placed in the interval between the object and eye-glass; the apertures of the magnifiers are likewise contracted on the same principle. But these stops are never in sufficient number, or sufficiently contracted, or

placed in such situations as they should be to be efficient. Dr. Goring states that it seems to him as if they were possessed of some superstitious dread of cutting off some of the light of the object-glass by inserting stops; or perhaps have wished to show their customers that the apertures of their glasses were clear, it being a common trick to make a large object glass, and then to cut off the effect of the imperfect edges by a contrivance, such as has been mentioned, which ordinary purchasers are not aware of, and thus suppose the instrument to be much finer and better than it really is; at least it is not uncommon to meet with this species of fraud in the works of the continental artists, who are very fond of making larger object-glasses than the English workmen.

451. To enter, however, into the subject, we shall here, as succinctly as possible, describe the method which Dr. Goring experimentally found to answer best for stifling fog in the astronomical refractor. It is a consideration which must obviously present itself, that, if an eye-hole be placed at the end of a telescope, precisely of the size and exactly in the focus of the pencil of rays produced by any particular magnifier, the end here proposed will be attained, as in the Gregorian and Cassagrain telescopes; it will, moreover, confine the eye truly to the axis of the tube, and thus prevent us from seeing any of that color in the image, which may always be perceived in the best instruments when the eye is a little removed from its true situation. Nevertheless, after sufficient trial, Dr. Goring rejected this method, as less expedient than the following, on account of the difficulty of executing it properly with high powers, as well as that it confines the field of view, and is disagreeable to the eye. It is evident, that with high powers the pencils of rays will be exceedingly small; therefore, if the aperture of the eye-hole is too large, it will be ineffectual, if too small it will obstruct light; it must, therefore, be executed to a very great nicety, which is not always to be expected; besides, in a case of such delicacy, if the eye-piece be not screwed on to a particular mark on the body of the tube, or if any of the parts of which the magnifying apparatus is composed be more or less screwed home than at the time of adjustment, it will be highly probable that the eye-hole will be a little thrown out of its true situation, and thus do away with the sole object for which it was constructed. Thus it is that what is perfect in theory will not always answer in practice. As to using eye-glasses with very small apertures for the same purpose (as contradistinguished from eye-holes placed at the ends of the cones of light, drawn to a point by the magnifiers), it is a method which cannot be made to exclude false rays with any degree of precision, even though their diameters are so much reduced as greatly to contract the field of view.

452. We shall now give an account of the plan which Dr. Goring has selected as most eligible, and which he has applied to a thirty inch, and eighteen inch refractor with complete success. Fig. 1, Plate VI., is an engraving of the section of a refractor, in which may be seen seven

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stops in the course of the tube and eye-piece (exclusive of the field bar), five of which are placed in such a manner, and of such apertures, as to pinch the cone of rays proceeding from the object glass as tight as possible, without intercepting any. It will be obvious that no foreign rays, or rays that are not parallel, will be able to find their way to the eye, nor can any light be reflected from the sides of the tube, so as to become visible. To execute this, use the following method:—When the telescope is finished in the usual way, and before any stop is inserted, attach its lowest astronomical eye-piece to it, and find the true solar or sidereal focus of the object-glass: when thus adjusted, measure carefully with a dynameter the size of the pencil of rays proceeding from the eye-piece, and note it down. Having then procured a plank of wood, covered with paper of sufficient length, take the aperture of the object-glass, and set it off at one end of the board; bisect it and draw a line at right angles to it, to the exact length of its focus; fix three strong needles into the three points of the focus and aperture of the object-glass, and then stretch a fine thread over them, which will then represent the cone of light which forms the image; set off six or seven inches from the focal extremity (an efficient stop cannot be placed nearer without contracting the field of view), and ascertain the distance between the threads at this point, which will give the diameter of the fifth stop. Then divide the remainder of the focal length into five equal parts, and the distance of the threads will give the diameter of four more stops, 4, 3, 2, and 1, in the figure, all sufficiently correct for the purpose. The stops are then to be made and inserted into the tube in their proper places; it will not, however, be amiss to make No. 1, 2, 3, and 4, a little too large, and to confide the main business of stopping the false rays to No. 5, which may be attached to the eye-tube, and move along with it, in adjusting the focus of the magnifier. This will give the instrument the power of adjusting itself to nearer objects on the earth, without losing any light from the effect of the stops, which otherwise must be adjusted to the shortest focus of the object-glass, and supposed to act perfectly only with parallel rays. It will not be amiss to have a very small eye-hole, placed correctly in the focus of the object-glass, which will give a great facility of adjusting the stops, as it will show, by merely looking through the instrument, if they are correctly placed or not. Lastly, having fixed these, apply the eye-piece, carrying the lowest magnifier as before; and again, with the dynameter measure the size of the cone of rays at the eye; if it measures precisely as before, you may be quite confident you have cut off no true light. Probably it will be thought there is already a superabundant quantity of stops, but, on examining the pencil with a magnifier, it will most likely be found that some false light is still reflected from the eye-tube; to remedy which, two more stops will be necessary as Nos. 6 and 7; both of these, however, must be larger than No. 5, and No. 7 the larger of the two, or the field of view will be contracted in the low powers. The

higher the power, the nearer an efficient stop may be placed toward the focal extremity of the pencil, proceeding from the object-glass; the lower it is, the farther the stop must recede, gradually of course, increasing in its aperture (unless the length of the eye-tube is increased in proportion to the focus of the magnifier employed). The distance of the main stop is fixed upon six or seven inches, which will suit all telescopes, and all magnifiers which are not more than one inch in focus. Here it seems proper to observe that when once the false light is duly excluded from a telescope, in the manner here recommended, the eye-glasses may be used of any aperture, and thus the field of view may be had of any size, even with a single eye-glass, which, when high magnifiers are used, is a great convenience, as it enables us to keep a celestial object in sight more easily, though we should only see it distinctly in the axis of the telescope; moreover, should it not be thought worth while to have the false light as perfectly excluded, as it possibly can be under all circumstances, the stops Nos. 1, 2, 3, and 4, may be rejected, and 5, 6, and 7 only executed; the consequence will only be, that some false light will be rendered sensible when the eye is not confined to the centre of the eye-glass.

453. We have given the full complement of stops, to render the exclusion as complete as possible. A good method of illustrating the effect of the stops is the following:—It is known that a terrestrial telescope, with an erecting eye-piece of four-glasses, would be rendered nearly useless by withdrawing the little stop placed between the two glasses which erect the image, by the quantity of fog which would be let in, supposing the instrument to be constructed in the usual way. But, in a telescope with such stops as above described, it is of no consequence whether the little stop is introduced or not, the performance being precisely the same in point of distinctness in both cases. In performing this experiment it is necessary, however, that the aperture of the little stop should be correctly and truly accommodated to the size of the pencil, which is formed by the glass, in the focus of which it is placed, so that it shall barely admit the image of the object-glass without cutting any of the side rays off, otherwise the experiment will not be fair. Opticians are apt sometimes to make these apertures so small as to intercept some of the light of the object-glass as effectually as a cap over the end of it would; for the achromaticity of an erecting eye-piece depends very much upon the size of the little aperture in question. Thus, where the diameter of an object-glass bears a very large proportion to its focal length, it will be impossible to admit the whole of the light proceeding from it into the eye-tube, without at the same time destroying the achromatic property of the latter, by the necessity which would arise of opening this stop too wide to consist with it. In the experiment we have detailed there is sufficient proof that the effect of the stops is equivalent, indeed more than equivalent, to that produced by the stop which is inserted in erecting eye-pieces for the purpose of procuring distinct

vision. The doctor observes 'Is there any merit in having effected, by means of half a dozen stops, what may be done well enough by one? certainly not. But take away the erecting eye-tube, screw on an astronomical eye-piece (either with or without a field bar), and where, I ask now,' he continues, 'is that part of structure which is to do the work that was performed in the erecting compound magnifier, now removed by the little stop of which I have said so much, supposing the telescope constructed in the usual manner, that is to say, without stops in the course of the focal distance of the object-glass, or at least without effectual ones?' It cannot be asserted that there is any thing equivalent in the instrument in its present condition to the former provision in it, for the valuable purpose of excluding false rays, though the expediency and utility of it in both cases must be equally admitted or denied, and it is clear that this can only be supplied in the astronomical telescope, by some such expedients as above resorted to.

454. As we conceive no one will be hardy enough to assert that there is no use in excluding false rays from a telescope intended to be used at night, for viewing the heavens, it will be superfluous for us to set about proving that we shall see a celestial object the better if no light, either direct or reflected, reaches the eye, save that actually proceeding from it. If the light of the heavens in a star-light night, and that of the bodies which produce it, are very faint, still there is the same ratio between their brightness and the false light they produce, though perhaps not so conspicuous as there is in that of terrestrial objects. Indeed it is perfectly well known to astronomers that, in the darkest night, wearing a black hood over the eyes greatly facilitates the vision of very faint and delicate objects, such as nebulae, &c., from the sensibility and tranquillity endured by these means in the retina, rendering it susceptible of the slightest impressions. Surely the effect of foreign light reaching the eye directly, or through the medium of a telescope, must be equally pernicious. It is in viewing the class of objects here designated that the utility of the stops we have described will be found; no one will expect that they can render a telescope better able to define or divide a star, because these properties depend upon the perfection of an entirely different part of its structure.

455. The Newtonian telescope has, among its other valuable peculiarities, that of having less false light in it than any other kind of telescope. The same striking effect, therefore, will not be manifest in excluding the trifling fog there is in it, as in another construction where it is more abundant. Nevertheless, there is something to be done. If we examine the pencil of rays proceeding from its eye piece with the magnifier, it does not precisely represent the image of a spangle on a piece of black cloth as it should do; a good deal of foreign light may be seen, formed partly by the side of the tube behind the diagonal metal, and partly by such portion of the end next the large mirror as the plain one can reflect along with the image, together

perhaps with some reverberated by the little tube which carries the magnifiers.

456. In fig. 2 is represented the method taken to remedy these imperfections in a seventy-seven inch focus, and seven inch aperture, Newtonian. The alterations from the common construction are as follows:—The tube which carries the magnifiers is seven inches long, instead of being only two inches or perhaps less, as is usual,—the diagonal metal is likewise placed nearer than usual to the large one, so that the length of the telescope is reduced about five inches; this is of course necessary to render the pencil of rays, reflected at right angles from the axis, long enough to act with the increased length of the eye-tube. As the diameter of the spectrum of the great mirror increases as we recede from its focal extremity, more of the small plain one will in this case be called upon to act; it, however, will still do the work without any increase in its size. By this arrangement a sufficient length of eye-tube is obtained to insert the stops 5, 6, and 7, as in the refractor; No. 5 is the efficient stop as before, and is seven-twentieths of an inch in diameter. The extrusion of the aberrant light is complete as long as the eye is in the axis of the instrument.

457. It would of course be impossible to insert any stops similar to those, 1, 2, 3, and 4, in the refractor, to render the effect more complete; nevertheless, Dr. Goring thinks, were it any object, a Newtonian would, by the aid of the contrivance he applied to his, act sufficiently well with a skeleton tube only. It now remains to describe the new adjustment which so long an eye-tube requires; for it is evident that any want of centricity and parallelism in the lenses composing the eye-glass to the axis, which might be tolerated in a very short tube, will be perfectly insupportable when aggravated by a longer one; moreover, the stop No. 5 will, if not truly concentric with the cone of light on which it operates, evidently impede some, as in such a case is perceptible by looking through the small eye-hole recommended in adjusting the refractor, or by examining the extreme pencil after it has passed the eye-glass with a magnifier. It is evident that the adjustment of a Newtonian is complete, when the pencil of rays which is reflected from the small metal truly perforates the axis of the eye-tube, and the centres of the lenses composing it; it matters not at what angle or in what direction the said cone of rays proceeding from the large metal be thrown by the diagonal one, provided these conditions are fulfilled (supposing, of course, the position of the small metal to be the centre of the tube, so that it shall truly receive the whole of the light of the great one). We may, therefore, either adjust the small metal to the eye-tube or the eye-tube to the small metal, or we may do both, which latter will probably be the most expedient; Dr. Goring has effected it in a very simple manner, by having the tube made to fit loosely into another wider piece, which is screwed on in the usual way, to the side of the telescope; the vacancy between them is filled up with wax, the inner tube is tight at the bottom of the ex-

ternal one by the interposition of a small setting chamfered at the edge, but admits of a slight rotatory motion towards the eye-glass by heating the wax with the flame of a candle, which is inserted into the external tube, and which unites them both together; time will be given to adjust it before the wax cools, when it will all set tight, and will not be liable to get out of order. Two small niches should be made, one in the shoulder of the screw of the external tube, and the other in that of the female screw to which it is applied, to be a guide that the two pieces may always be screwed home to a particular point; or it is very probable the adjustment may be spoiled, because it will be a chance if the eye-tube when fixed, is precisely at right angles to the side of the telescope. A variety of methods of effecting this adjustment will present themselves to the workman. Thus, instead of the wax, three screws might be used, fixed into the external tube; or such a contrivance as is represented in fig. 2, by having counter screws to play against those by which the setting for the eye-piece is attached to the rackwork, on the side of the telescope, &c. To conclude, as an Herschel telescope is nothing but a Newtonian, used without the interposition of a small metal reflector, whatever has been said of the latter, will equally apply to it, and the same principle in the eye-tube and adjustment will for the same reasons be equally adapted to both, though the manner of execution will be different.

458. Microscopes, though but toys compared with telescopes, nevertheless deserve to be rendered as perfect as possible; for they yield not to them in the quantity and variety of rational amusement which they are capable of introducing to us (though not of the sublime description of the wonders of the heavens). Compound microscopes, though not so much to be depended upon for the purposes of discovery and philosophical investigation as single lenses, are still best adapted for recreation; but all those constructed on the common principle are so full of fog as to be quite disagreeable for examining opaque objects, which render this defect more striking than transparent ones. This false light results from the custom of making the object-glass of a very small aperture, instead of giving it a larger one, and placing a stop in its proper place (the focus of the lens employed). It is totally impossible to get rid of the fog in any other way. No doubt the larger the aperture of the lens of the common object-glass, the more indistinctness is sensible; and the more it is reduced, the less; but no practical construction of the aperture will effect the desired purpose completely, because the principle is itself intrinsically bad, and incorrect at least for low powers.

459. Now, if we form a microscopic object-glass of a single lens of considerable aperture, having a stop in its focus of about the same diameter as the apertures of the common lenses used for compound microscopes, that is to say, about one-tenth or one-twelfth part of their focal distance, we shall form an object-glass which gives a clear image, free from fog indeed,

but very deficient in other respects; for, the stop being placed where the rays cross each other, a large portion of the aperture of the lens is called into action in comparison to what is usually made use of, when it is at once limited by a stop of the same diameter applied close to the glass; the aberrations both chromatic and spherical are here immediately felt; to remedy these, another lens must be employed, the best position for which is close to, or very near the farther side of the stop. The focus of it must be to that of the first as three to two, or as two to one; for low powers, however, it may be about two and a half to two; for the higher, the best proportions seems to be as two to one. The lenses employed should be plain convex, having their curves towards each other as represented in figs. 3, 4, 5, and 6, which are drawings of four object-glasses of this description which Dr. Goring caused to be executed; the lowest power is two inches focus, the highest half an inch; the foci of the lenses, and the size of the stops, &c., are as there represented. These object-glasses are bright, clear, and distinct, free from spherical aberration, and will show no sensible color with opaque objects of any kind, not even with so trying a one as the enamelled white letters on a black-ground generally used by opticians to try their telescopes with. When, however, they are made to view an object illuminated from behind, which does not suffer the light to pass through it while its edges are seen, as for example the legs of some insects, some kinds of moss, &c. which have very little transparency, the uncorrected color is then decidedly seen; such objects are the best tests of achromaticity for telescopes as well as microscopes; equivalent terrestrial ones for a telescope will be the bars of a window seen from the interior of the apartment to which it belongs, or the naked branches of a tree in winter, seen against the light of the sky, more especially of the sun, and nearly opposite the observer. In addition to the four object-glasses, above described, Dr. Goring has two more of one-fourth and one-eighth of an inch focus, which are not inserted, because, although executed with the utmost care, they are no better than the common ones. Dr. Goring states that he was grievously disappointed with these; for he had fully expected that the same principle applied to deep object-glasses would form as superior an object-glass for high powers as for low ones; however, the reverse is the fact; it is one of those things which can only be learnt from experience, and could not have been predicated *a priori*. Still, therefore, the common object-glass is the best for high powers, viz. for those of a quarter of an inch focus, and upwards. There are, nevertheless, many transparent objects which cannot be seen without object-glasses of at least one-tenth of an inch focus; such are many kinds of animalcules and the minute lines on the dust of a butterfly's wing, &c. For these the common single lens of small aperture will perhaps ever remain the only efficient object-glass; an equivalent power obtained with Dr. G.'s object-glasses, or those of the common construction of similar focus, by

increasing the depth of the eye-glass will never show the objects in question, because what may be called the penetrating power of a compound microscope depends upon the depth of its object-glass, as that of a telescope upon the aperture of the metal or glass which forms the image viewed by the eye-glass. The eye-glass, either of a microscope or telescope, merely develops what is contained in the image it enables us to view; it cannot of course render any thing sensible to our sight which does not exist in the spectrum formed by the object-glass or metal.

460. We may here advert to a circumstance, relative to the proper apertures of the common microscopic object-glasses, which is, perhaps, not duly attended to. It is certain that the more their apertures are reduced (within a certain point) the more fog you exclude; and in this way you improve the instrument; yet, if this reduction is pushed too far, it will prevent you from seeing a certain class of objects, even while the vision of others seems to be ameliorated. Thus the parallel lines on the dust or feathers of a butterfly's wing can be just seen with an object-glass of one-tenth of an inch focus, and one-twenty-fifth of an inch aperture, as it can be measured: if, however, this aperture is very slightly contracted, they can no longer be seen with any art or management of the light; at the same time other objects will appear foggy and indistinct with this same aperture, especially if opaque, and the vision of them will be improved by diminishing it. Dr. Goring thinks, therefore, that the apertures should be regulated by this ratio of one-twenty-fifth of an inch aperture to one-tenth of an inch focus.

461. In figs. 7, 8, and 9, are representations of some silver cups for holding very deep single lenses, intended to view opaque objects. It is generally supposed that single lenses will show objects perfectly clear and without fog, but this is not the case unless their apertures are very small; lenses of $\frac{1}{30}$, $\frac{1}{40}$, $\frac{1}{50}$, and $\frac{1}{60}$ th of an inch focus require their apertures to be so much reduced to show opaque objects clearly, that it is scarcely possible to see at all with them from the want of light. These cups were so contrived to remedy this defect as far as it is practicable; their radius is only one-fourth of an inch, their focus consequently. These condense light much more than the larger cups commonly used, and illuminate much more powerfully. It is true that they only enlighten a small portion of an object, but then we can only see a very small portion with such deep lenses as they are intended to hold; they are not so small but that they may be made to receive and condense the whole of the light proceeding from a bull's-eye lens placed at a proper distance from them, and in this way, with no other light than that of a common candle, Dr. Goring has been enabled to see an opaque object well with a compound microscope, having an object-glass of only one-thirtieth of an inch focus set in one of them, with only a moderate aperture. A lens of one-sixtieth of an inch set in this manner, used as a single lens, likewise shows opaque objects in a manner which leaves nothing to be desired.

462. It is necessary, however, for the stops between which the lenses are placed to be very accurately made. They should be turned out of a piece of solid brass, the external one very thin, and the holes so correct as always to coincide with each other when the stops are turned round; the apertures must be quite free from burrs; in addition to which the stops must be so adjusted that the focus of the lens and that of the cup may precisely correspond, otherwise the benefit of the cup is in a great measure lost. Fig. 9 will carry one-eighth or one-tenth of an inch without any stop at all, which is a great convenience; for the lens is in this case close to the eye, and the field of view larger in consequence: the stops for the deeper lenses are much shorter than they would be with larger cups, so that the field is increased in the same way, and the eye much less strained in using them, than it would be were the lens farther off from it.

463. We may now notice the monochromatic lamp contrived by Dr. Brewster for microscopical and other purposes, with an account and description of which he furnished the Royal Society of Edinburgh, and which is inserted in vol. IX. p. 433 of their Transactions. Our limits will not admit of the elaborate account of this important invention presented to the society, but the following abridgment of the paper will enable our readers to fully appreciate its value.

464. Dr. Brewster observes that in a paper on Vision through colored glasses, which he submitted to the society, he pointed out the advantages of colored media in microscopical and telescopic observations. Having experienced the great utility of green and red lenses, in developing vegetable structures that required to be examined with high powers, he was anxious to derive from this new principle all the advantages which it appeared to possess. In attempting to do this, it became necessary to ascertain the power of giving distinct vision, which belonged to each separate color of the spectrum; and though he had stated in his former paper, that it was difficult to discover any reason why one colored medium should be preferred to another, provided each of them transmit equal quantities of homogeneous light; yet it was desirable to put this theoretical opinion to the test of direct experiment. Sir William Herschel had long ago investigated this point, in reference to the use of colored media for solar observations, and had concluded that every color of the spectrum possessed the same power of giving distinct vision; but his method of observation, which consisted in viewing through a microscope a nail illuminated in succession with each of the colors of the prism, was by no means calculated to give definitive results, and therefore left the question in all its uncertainty.

465. In order to obtain precise indications, which were not capable of being misinterpreted when applied to practical purposes, Dr. Brewster formed a spectrum from a luminous disc, by means of a prism of a highly dispersing substance, and with a large refracting angle. He then examined this spectrum through a great variety of colored media, both solid and fluid,

and marked the size and shape of the image into which it was converted. The perfection of this image, or its narrowness in the direction of the length of the spectrum, became a precise and unequivocal test of the fitness for distinct vision which belonged to the light out of which it was formed.

466. By this method of observation he found that a distinct image of the luminous disc could not be obtained either by producing a blue or a green image, and that it was only in the red portion of the spectrum that such an effect was likely to be obtained. In the use of purple glasses it was observed that the middle portion of the red space was absorbed before the two extreme portions, so that instead of one red image there were two quite separate, and tolerably distinct. By increasing, however, the thickness of the plate, the most refrangible red image was absorbed, and the least refrangible one left in a state of the most perfect distinctness. Although he had now determined the part of the spectrum that was best fitted for giving perfect vision, yet the quantity of light extinguished before the insulation of the extreme red ray was affected was so great as to render the determination of little practical utility, excepting in cases where the outline of an object was to be observed. Had it been possible to insulate the most luminous rays of the spectrum as perfectly as the extreme red ones, the advantage would have been of very considerable amount; but he found this quite impracticable.

467. Abandoning, therefore, all hopes of obtaining from colored media any farther improvement upon the microscope than what had been formerly announced, it occurred to Dr. Brewster that the object which he had in view might be obtained, if he could procure from the combustion of inflammable substances a homogeneous flame for illuminating microscopic objects.

468. It had long been known that a great quantity of homogeneous yellow light was created by placing salt or nitre in the white flame of a candle, or in the blue and white flame of burning alcohol. A light, however, generated in this manner, was more fitted for a casual experiment than for a permanent source of illumination; and, as insalubrious vapors are disengaged during the combustion of these salts, he did not avail himself of this method of obtaining yellow light.

469. After numerous experiments, attended with much trouble and disappointment, he found that almost all bodies in which the combustion was imperfect, such as paper, linen, cotton, &c., gave a light in which the homogeneous yellow rays predominated; that the quantity of yellow light increased with the humidity of these bodies; and that a great portion of the same light was generated when various flames were urged mechanically by a blow-pipe or a pair of bellows.

470. As the yellow rays seemed to be the product of an imperfect combustion, Dr. Brewster conceived that alcohol diluted with water would produce them in greater abundance than when it was in a state of purity; and, upon making the experiment, found it to exceed beyond his most sanguine expectations. The whole

of the flame, with the exception of a small portion of blue light, was a fine homogeneous yellow, which, when analysed by the prism, exhibited faint traces of green and blue, but not a single ray of red or orange light. The green and blue rays, which accompanied the yellow flame had comparatively so little intensity, that they disappeared in the processes of illuminating and magnifying the object under examination; and, even if they had existed in greater abundance, it was quite easy to absorb them at once by the intervention of a plate of the palest yellow glass, and thus render the lamp perfectly monochromatic.

471. From many experiments on the combustion of diluted alcohol he found that the discharge of yellow light depended greatly on the nature of the wick, and on the rapidity with which the fluid was converted into vapor. A piece of sponge, with a number of projecting points, answered the purpose of a wick better than any other substance, and the extrication of the yellow light became more copious by placing a common spirit-lamp below the barrier of the other. In order to obtain a very strong light, for occasional purposes, he connected with the top of the burner a frame of wire-gauze, which by moving vertically round a hinge, or by a motion to one side, could be placed in a horizontal position, about half an inch above the wick. As soon as it had become red-hot it was made to descend into contact with the sponge, when it converted the alcohol rapidly into vapor, and produced an abundant discharge of yellow light.

472. If a permanently strong light is required, it is found preferable to dispense entirely with the use of the wick, and to allow the diluted alcohol to descend slowly from the rim into the bottom of a concave dish of platinum, kept very hot by a spirit-lamp placed beneath it. The bottom of the dish is made with a number of projecting eminences, in order that the film of the fluid which rests upon it may be exposed at many points to the action of the heated surface. After the lamp has burned for some time, a portion of unevaporated water, mixed with a small quantity of alcohol, will remain at the bottom of the dish, in a state unfit for combustion. This water may be taken up by a sponge, or it might be prevented from accumulating, by having a fountain of pure alcohol, from which the exhausted strength of the diluted fluid could be renewed.

473. The monochromatic lamp being thus completed, Dr. Brewster lost no time in applying it to the illumination of microscopic objects. The effect which it produced far exceeded his expectations. The images of the most minute vegetable structures were precise and distinct, and the vision in every respect more perfect than it could have been, had all the lenses of the microscope been made completely achromatic by the most skilful artist.

474. Independent of its use in microscopical observations, the monochromatic lamp will find an extensive application in various branches of the arts and sciences. In certain cases of imperfect vision, where a number of colored images

Fig. 1.

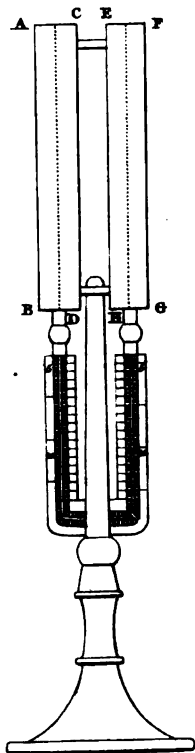


Fig. 2.

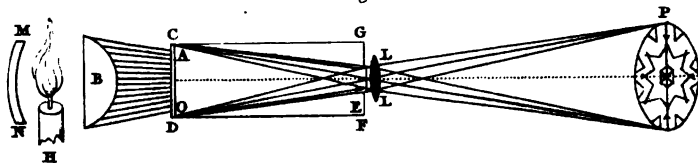


Fig. 3.

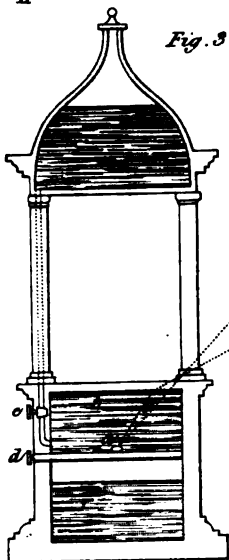


Fig. 6. Experiment 1.

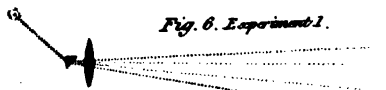


Fig. 7. Exp. 2.

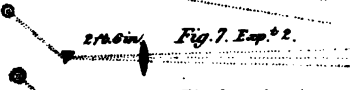


Fig. 8. Exp. 3.

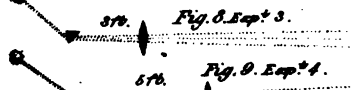


Fig. 9. Exp. 4.

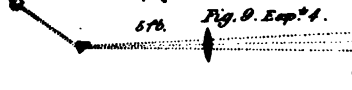


Fig. 10. Exp. 5.

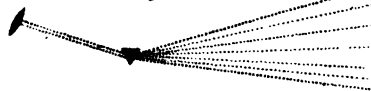


Fig. 4.

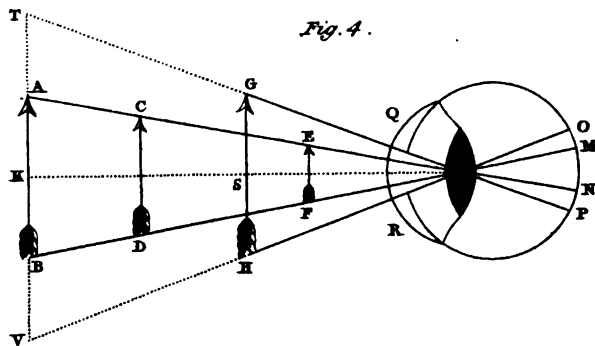


Fig. 5.

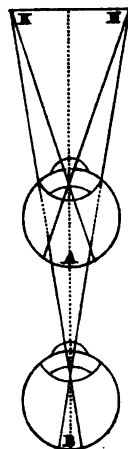


Fig. 13.

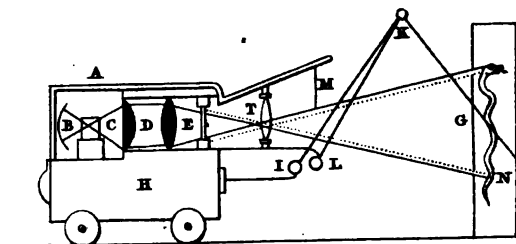


Fig. 11. Exp. 6.

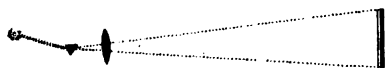
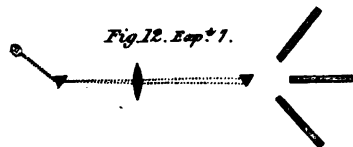


Fig. 12. Exp. 1.



are formed by the separation of the fibres of the crystalline lens, a homogeneous light will improve the vision, by removing the prismatic tints, which obliterate the principal image. In illuminating the wires of transit instruments and micrometers; in graduating the limbs of divided instruments, which is generally done by candle-light; in reading off the same divisions in fixed observations; in forming signals in trigonometrical surveys; in obtaining correct and uniform measures of refractive powers; in measuring the separation of the two pencils in doubly-refracting crystals; in determining the focal lengths of lenses; in observing various optical phenomena, where the light is decomposed; in these, and in general in all delicate works, where correct vision is essential, the employment of a homogeneous flame will be found to confer the most signal benefits.

475. Fig. 10 represents one form of the monochromatic lamp, where A is the reservoir containing the diluted alcohol, which descends by the channel ABCD to the broad wick E, which is generally made of sponge. A frame of wire-gauze F moves round a hinge H, so that it can be brought over the flame, and made to descend, when hot, upon the surface of the wick. Excellent wicks may be made with concentric cylinders of thin mica, or of platinum foil.

476. Fig. 11 is another form of the lamp, without a wick, in which the diluted alcohol is burned in a flat platinum or metallic dish MN, which may be made to have a slight spontaneous oscillatory motion, for the purpose of bringing the fluid over the heated projections of the platinum. A common spirit-lamp OP, enclosed in a case, is placed below the platinum-dish MN, in order to produce sufficient heat for throwing off the vapor from the diluted alcohol. A chimney, or a cylinder, of pale yellow glass may be placed round the flame, if it should be thought of some consequence to absorb the small portion of blue light which accompanies the yellow flame.

477. The photometric instrument we are now about to describe is likely to be of the utmost importance in the science of optics, and as Mr. Ritchie has just furnished the Royal Society with an account of the theory on which it is constructed, as well as the delicate minutæ essential to its completion, our readers may for a few billings readily construct a similar apparatus.

478. The instrument consists of two cylinders of planished tin plate, from two to ten or twelve inches in diameter, and from a quarter of an inch to an inch deep. One end of each cylinder is enclosed by a circular plate of the same metal, soldered completely air-tight, the other ends being shut up by circular plates of the finest and thickest plate glass, made perfectly air-tight. Half way between the plates of glass and the ends of the cylinders there is a circular piece of black bibulous paper, for the purpose of absorbing the light which permeates the glass, and instantly converting it into heat.

479. The two cylinders are connected by small pieces of thermometer-tubes, which keep them steady, with their faces parallel to each other, but turned in opposite directions, and all serve

to make the insulation as complete as possible. The chambers are then connected by a small bent tube in the form of the letter U, having small bulbs near its upper extremities, and containing a little sulphuric acid, tinged with carmine. The instrument is supported upon a pedestal, having a vertical opening through the stem, to allow the glass tube to pass along it, and thus secure it from accidents.

480. A small scale divided into any number of equal parts is attached to each branch of the tube. In plate VII. fig. 1, ABCD and EFGH are the cylinders; AB, and FG, the plates of glass. CD, EFG, the ends shut up by the cylinder tin plates: the blackened paper is represented by the lines between AB, CD, and EH, FG. The other parts will be obvious from the mere inspection of the figure.

481. The accuracy of the instrument evidently depends upon the perfect equality of its two opposite ends. To ascertain if it be accurately constructed, place it between two steady flames, and move it nearer the one or the other, till the liquid in the tube remains stationary at the division of the scale at which it formerly stood. Turn it half round, without altering its distances from the flames, and, if the liquid remains stationary at the same division, the instrument is correct. To show the extreme delicacy of the instrument, place it opposite a single candle, and it will be sensibly affected at the distance of ten, twenty, or thirty feet, provided it be of sufficient diameter, whilst it will not be sensibly acted upon at the same distance by a mass of heated iron affording twenty times the quantity of heat. In order to cut off effectually the influence of mere radiant heat, I sometimes use screens composed of two plates of glass, placed parallel to each other, with a quantity of water interposed.

482. Place the instrument between any number of steady lights whose intensities are known: as, for example, between four wax candles opposite one end, and one candle opposite the other, and move the photometer till the fluid remains stationary at the division where it formerly stood, and it will be found that the distances are directly as the square roots of the number of candles; or, in other words, that the intensities of the lights will be inversely as the squares of the distances. If gas lights be employed having burners capable of consuming known quantities of gas in equal times, and the photometer be placed between them, so that the effect upon the air in each chamber shall be the same, it will be found that the quantities of gas consumed by each will be exactly proportional to the squares of the distances of their respective flames from the end of the photometer.

483. This instrument seems well adapted for determining the relative quantities of light given out by the combustion of coal and oil-gas. Place the instrument as before between the two burners, and ascertain the relative intensities of the two lights, by squaring their distances from the adjacent ends of the instrument; ascertain the quantities of gas consumed by each of the burners in the same time; multiply these quantities by the squares of the respective distances, and

the product will be the relative quantities of light afforded by the gases. Let d be the distance of the coal-gas light, and d' that of the oil-gas light; and let q be the quantity of coal-gas consumed in a given time, and q' the quantity of oil-gas consumed in the same time, then the intensity of the coal-gas will be to that of the oil-gas $q d^2$ to $q' d'^2$.

484. To find the ratio between the quantities of light given out by the sun and that afforded by a common candle, place one end of the instrument opposite the sun, and bring the candle opposite the other end, till the fluid in the stem remains stationary at the original division; and the light given out by the candle, will evidently be to that given out by the sun, as the square of a few inches to the square of the number of inches contained in 95,000,000 miles, provided none of the sun's light had been absorbed in its passage through the atmosphere. The delicacy of the instrument is such that, if it be placed opposite the sun without a counteracting force, the light absorbed from the body will be so great, as to cause the liquid to move through a tube twenty or thirty feet long. By covering one end of the instrument and directing the other to various quarters of the sky, we can ascertain the relation between the quantities of light reflected from the atmosphere and clouds floating in those regions.

485. Though this instrument has some resemblance to professor Leslie's photometer, yet it is founded on principles essentially different: the one depending on the difference of the temperatures of the two bulbs, whilst the perfection of the other results from the equality of the temperature of the air contained in both chambers. The one has a scale a few inches long attached to one end of the vent tube, whilst the scale of the other is the distance between the two antagonist flames. The delicacy of the one is, from its very nature, combined within very narrow limits, whilst that of the other may be increased at pleasure.

486. Having thus furnished a brief outline of the most valuable new instruments, we cannot better conclude our general view of this important science than by furnishing our readers with a few experiments illustrative of the subject.

487. The *cistula* is a machine or apparatus whereby small bodies are represented extremely large, and near ones extremely wide, and diffused through a vast space, with other agreeable phenomena, by means of mirrors, disposed by the laws of catoptrics, in the concavity of a kind of chest.

488. Of these there are various kinds, accommodated to the various intentions of the artificer: some multiply the objects; some deform; some magnify, &c. The structure of one or two of them will suffice to show how many more may be made.

489. If we wish to make a catoptric cistula to represent several different scenes of objects, when viewed at different holes, it is only necessary to provide a polygonous box, of the figure of the multilateral prism, $ABCDE$, in the following diagram, and divide its cavity by diagonal planes EB , EC , DA , intersecting each other in the centre into as many triangular locules, or cells, as the chest has sides. Line these diagonal planes

with plane mirrors: in the lateral planes make round holes, through which the eye may be directed within the cells of the box. The holes are to be covered with plain glasses, ground within, but not polished, to prevent the object, in the cells, from appearing too distinctly.

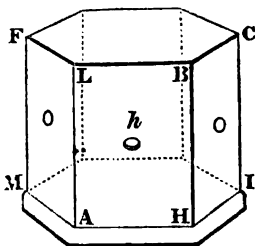
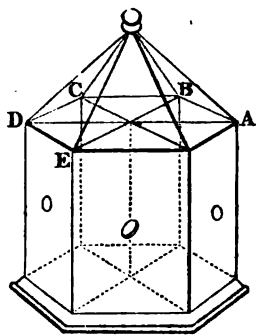
In each cell are to be placed the different objects whose images are to be exhibited; then covering up the top of the box with a thin transparent membrane, or parchment, to admit the light, the machine is complete.

490. For, from the laws of reflection, it follows, that the images of objects, placed within the angles of mirrors, are multiplied, and appear some more remote than others; whence the objects in one cell will appear to take up more room than is contained in the whole box. By looking, therefore, through one hole only, the objects in one cell will be seen, but those multiplied and diffused through a space much larger than the whole box; thus every new hole will afford a new scene: according to the different angles the mirrors make with each other, the representations will be different: if they be at an angle greater than a right one, the images will be distorted.

491. The parchment that covers the machine, may be made pellucid, by washing it several times in a very clear ley, then in warm water, and bracing it tight, and exposing it to the air to dry. If it be desired to throw any color on the objects, it may be done by coloring the parchment. Zahnus recommends verdigris ground in vinegar for green; decoction of Brasil wood for red, &c.

492. Let us now, however, point out how to make a catoptric cistula to represent the objects within it prodigiously multiplied, and diffused through a vast space. To construct this amazing apparatus, take a chest, as in the above engraving, but without dividing the inner cavity into any apartments, or cells; line the lateral planes $CBHI$, $BHLA$, $ALMF$, &c., with plane mirrors, and at the foramina, or apertures, pare off the tin and quicksilver, that the eye may see through: place any objects in the bottom MI , as a bird in a cage, &c.

493. Here the eye, looking through the aperture h , will see each object placed at bottom vastly multiplied, and the images removed at equal distances from one another. Hence, with a large multangular room, in a royal palace, lined with large mirrors, over which were plain pellucid glasses to admit the light, it is evident



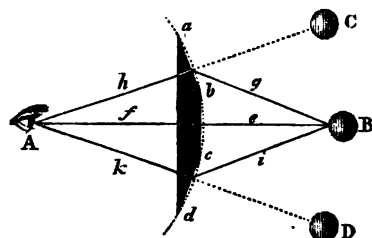
that the effects would be very surprising and magnificent.

494. Make two holes in the wainscot of a room, each a foot high and ten inches wide, and about a foot distant from each other. Let these apertures be about the height of a man's head; and in each of them place a transparent glass in a frame, like a common mirror.

495. Behind the partition, and directly facing each aperture, place two mirrors, enclosed in the wainscot, in an angle of 45° . These mirrors are each to be eighteen inches square: and all the space between them must be enclosed with pasteboard painted black, and well closed, that no light may enter: let there be also two curtains to cover them, which may be drawn aside at pleasure. When a person looks into one of these fictitious mirrors, instead of seeing his own face, he will see the object that is in front of the other; thus, if two persons stand at the same time before these mirrors, instead of each seeing himself, they will reciprocally see each other. There should be a scone with a lighted candle, placed on each side of the two glasses in the wainscot, to enlighten the faces of the persons who look in them, or the experiment will not have so remarkable an effect.

496. Place a shilling in a large drinking glass of a conical shape, small at the bottom and wide at the top, and let it be half full of water; then place a plate on the top of it, and turn it quickly over, that the water may not escape. There will be seen on the plate a piece of coin the size of half-a-crown, and a little higher up, another the size of a shilling.

497. The multiplying-glass is a flat plano-



convex lens, a, b, c, d , in the above figure. Rays issuing from the object B, and falling upon the plane surface bc , come to the eye A in the direction ef , which show the object in its true place at B. But rays from the same object also fall upon the flat surfaces ab and cd , and thence coming to the eye in the directions h and k , make the object also to be seen at C and D, so that the object B will be multiplied into as many different objects as the lens has flat surfaces.

498. The following experiment was made by Mr. H. Phillips, to show the different effects of natural and artificial lights on plants. He selected plants of the *mimosa*, *elegans*, *nova*, and *decurrens*, while their pinnated leaves were fully expanded. On placing them in a dark room, the leaves immediately collapsed like the sticks of a fan, or as the feathers of a bird's wing fold over each other. The strongest artificial light that could now be thrown on them had no effect

on the automatic motion of the plants, and the foliage remained in a collapsed state until they were removed into the natural light of day, when their sensitive properties immediately became perceptible, and the whole of the leaflets were seen moving towards their natural and elegant direction, with as much regularity as a regiment of soldiers file off at the word of command.

499. Dr. Brewster's mode of arranging the plane mirrors in the *caleidoscope* is exceedingly perfect. In the ordinary form it is, however, still confined to the gaze of the individual whose eye is placed in contact with the tube; and we now furnish a sketch illustrative of the magic lantern *caleidoscope*, by which it may be exhibited in a large room.

500. The general principle of the apparatus requisite for this subject is shown in fig. 2, where $C D G F$ is the tube containing the reflectors A, O, E , &c. The objects from which the pictures are to be created are placed in the cell $C D$, which may be made either to have a rotatory movement round the axis of the tube, or to slide through a groove, like the sliders of a magic lantern. These objects are powerfully illuminated by a lens B , which concentrates upon them the direct light of the lamp or candle H ; and also the part of the light which is reflected from the mirror $M N$. At the eye end E of the *caleidoscope* is placed a lens $L L$, close to the end of the reflectors, and having its centre coincident with the centre of the aperture at E . In order that this lens may form behind it an image, $P P$, of the objects placed in the object-plate $C D$, its focal length must be less than the length $A E$ of the plates. If the focal length of $L L$ is so small as one half of $A E$, then it follows, from the principles of optics, that the distance $L P$, at which the image is formed behind the lens, will be precisely equal to the distance $A E$ of the object; but this is obviously too small a distance, for the diameter of $P P$ would be equal only to the apparent diameter of the circular aperture of the *caleidoscope*, or to twice $A O$. Hence it is necessary that the focal length of the lens $L L$ be less than $A E$, and greater than half of $A E$. Two-thirds or three-fourths of $A E$ will be found to be a suitable focal strength; for, if it is larger than this, the image will be formed upon the wall at too great a distance from the instrument.

501. When the instrument is thus fitted up, an enlarged image of the pattern will be thrown upon the wall, which must be covered with white paper, or some white ground, in order to exhibit the colors to advantage. By turning the object-plate round its centre, or, if it is a rectilinear one, by pushing it through the groove, and at the same time giving it a rotatory motion, the pattern on the wall will undergo every possible transformation, and exhibit to the spectators, in a magnified form, all those variations which would have been observed by applying the eye to the *caleidoscope*.

502. If a box be formed with a small aperture in one of its sides, and three lights be made to revolve on a piece of wood in the centre, the candle opposite the axis will be visible on a

semi-transparent screen intended to receive its image. The other two candles will also have their flames depicted on the screen, at similar distances, on each side. This experiment serves to show the exceeding minuteness of the rays which emanate from the candles: for, if they were not exceedingly small, they could not pass each other without destroying the perfection of the image.

503. This experiment may be made very amusing by placing a piece of glass, with a ship or any other object painted on it, in the aperture; and, when the candles are parallel to the screen, three images will be seen; but, on making them revolve through a quarter of a circle, only one image will be visible on the screen. By increasing the number of candles the ships will be increased in an equal ratio; and a single ship, by turning the row of candles, will be converted into an entire fleet.

504. If a person be placed directly before a large *concave mirror*, but further from it than its centre of concavity, he will see an inverted image of himself in the air, between him and the mirror, of a less size than his own person. If he hold out his hand towards the mirror, the hand of the image will come out towards his hand, and coincide with it, of an equal bulk when his hand is in the centre of concavity; and he will imagine he may shake hands with his image. If he reach his hand further, the hand of the image will pass by his hand, and come between it and his body; and, if he move his hand towards either side, the hand of the image will move towards the other; so that whatever way the object moves the image will move the contrary way. A bystander will see nothing of the image, because none of the reflected rays that form it enter his eyes.

505. From this remarkable property of a concave mirror to form an image in the air, mirrors of this sort are used to produce a variety of singular appearances, to amuse the curious, or to impose upon the ignorant and superstitious. To a few we shall give a place. If a fire be made in a large room, and a smooth mahogany table be placed at a considerable distance, near the wall, before a large concave mirror, so situated that the light of the fire may be reflected from the mirror to its focus upon the table; if a person stand by the table he will see nothing upon it but a longish beam of light; but, if he stand at a distance towards the fire, not directly between the fire and the mirror, he will see an image of the fire upon the table, large and erect. If another person, who knows nothing of the experiment beforehand, should chance to come into the room, and should look from the fire towards the table, he would be startled at the appearance; for the table would seem to be on fire. In this experiment there should be no light in the room but what proceeds from the fire; and the mirror ought to be at least fifteen inches in diameter.

506. If the fire used in the last experiment be extinguished or covered by a screen, and a large candle be placed in a similar position, a person standing by the candle will see the appearance of a star, or rather planet, upon the table, as brilliant as Venus or Jupiter in a cloudless sky.

If a slender wax-taper be placed near the candle, a satellite to the planet will appear on the table; and, if the taper be moved round the candle, the mimic satellite will go round the planet.

507. If a person looks for some minutes steadily on a window, in the beginning of the evening twilight, or in a dark day, and then moves his eyes a little, so that those parts of the retina on which the dark frame-work of the window was delineated may now fall on the glass part of it, many luminous lines, representing the frame-work, will appear to lie across the glass panes: for those parts of the retina which were before least stimulated by the dark frame-work are now more sensible to light than the other parts of the retina which were exposed to the more luminous parts of the window.

508. Make with ink, on white paper, a very black spot, about half an inch in diameter, with a tail about an inch in length, so as to represent a *tadpole*; look steadily for a minute on this spot, and, on moving the eye a little, the figure of the tadpole will be seen on the white part of the paper, which figure of the tadpole will appear whiter or more luminous than the other parts of the white paper; for the part of the retina on which the tadpole was delineated is now more sensible to light than the other parts of it which were exposed to the white paper. This experiment is mentioned by Dr. Irwin, but is not by him ascribed to the true cause, namely, the great sensibility of that part of the retina which has been exposed to the black spot, than of the other parts which had received the white field of paper.

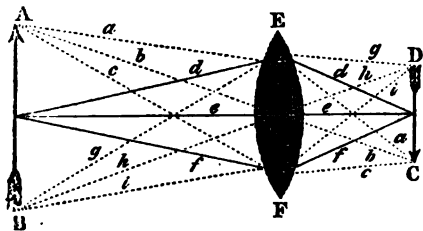
509. Fig. 3 will serve to illustrate the construction of a very elegant optical toy, or *hydropneumatic temple*.

510. Let us suppose two vessels, the uppermost filled with water, and sustained by two little pillars—one of which is hollow, and furnished with a cock, *e*. Let the other vessel be divided by a partition into two parts; the lower of which may be opened or closed by means of a cock at *e*. Upon the partition place an image, *a*, which the spectator at *f* cannot see by a direct ray, *f, g*. If now the cock, *e*, be opened, the water descending into the cavity, beneath the ray, will be refracted from the perpendicular; so that the spectator will now see the object by the refracted ray. And again shutting the cock *e*, and opening the other *d*, the water will descend into the lower cavity; whence, the refraction ceasing, no rays will now come from the object to the eye; but, shutting the cock *d* again, and opening the other *e*, the water will fill the cavity again, and bring the object in sight afresh.

510.* Provide a sufficient number of small equilateral prisms, a few lines only in breadth, and in length equal to the height of the painting which you intend to make, and place them all close to each other on the ground to be occupied by the painting. Then cut the painting into bands equal to each of the faces of the prism, and cement them, in order, to the faces of the same side. When this is done, take a painting quite different from the former, and, having divided it into bands in the same manner, cement them to the faces of the opposite side. It

pencils of rays materially increases the curvature of the image. In fact no pencil of rays, falling obliquely on a spherical surface, can be collected any where to a perfect focus: the image of a circle would become most distinct at one distance, and that of its diameter at another; but for both these images the surface ought to be much more curved than that which has been usually considered, and the mean of the curvature required for them, which must be the best for the ground or bottom of a camera obscura is equal to that of a sphere of which the radius is three-eighths of the focal distance, when a double convex lens of crown-glass is employed.

516. The general arrangement of this apparatus may be best understood by a reference to the accompanying diagram. Diverging pencils of



rays, as *abc, def, ghi*, issuing from all points of the object *AB*, on the side next the convex lens *EF*, after passing through the lens, will converge to as many points beyond it, and at those points of convergent meeting they will form an inverted picture *CD* of the object on a white paper.

517. Among the various phenomena of vision which were observed by the philosophers of the last century those which arise from *indirect impressions*, and from the influence of highly attenuated light upon the retina, seem to have escaped their notice.

518. If we look at a narrow slip of white paper placed upon a black or a colored ground, it will never appear to vanish, however long and attentively we view it. But if the eye is fixed steadily upon any object within two or three inches of the paper, so as to see it only indirectly, or by oblique division, the slip of paper will occasionally disappear, as if it had been entirely removed from the ground—the color of the retina extending itself over the part of the retina occupied by the image of the slip of paper.

519. If the object seen indirectly is a black stripe on a white ground, it vanishes in a similar manner; and, what is still more remarkable, the same phenomena of disappearance take place, whether the object is viewed with one or with both eyes.

520. When the indirect object is luminous, like a candle, it never vanishes entirely, unless it is placed at a great distance, but it swells and contracts, and is surrounded by a halo of nebulous light, so that the excitement must extend itself to contiguous portions of the retina, which are not influenced by the light itself.

521. If we place two candles at the distance of about eight or ten feet from the eye, and about twelve inches from each other, and view

the one directly, and the other indirectly, the indirect image will be encircled with a bright ring of yellow light, and the bright line within the ring will have a pale blue color. If the candles are viewed through a prism, the red and green lights of the indirect image vanish, and leave only a large mass of yellow, terminated with a portion of blue light.

522. While Dr. Brewster was performing this experiment, and looking steadily and directly at one of the prismatic images of the candle, he was surprised to observe that the red and green rays began to disappear, leaving only yellow and a small portion of blue, and, when the eye was kept immovably fixed on the same part of the image, the yellow light became almost pure white, so that the prismatic image was converted into an elongated image of white light.

523. If the slip of white paper, viewed indirectly with both eyes, is placed so near as to be seen double, the rays which proceed from it no longer fall on corresponding points of the retina. In this case the two images do not vanish simultaneously; but, when the one begins to disappear, the other begins soon after it, so that they sometimes appear to be extinguished at the same time.

524. In order to ascertain whether or not the accidental color of an object seen indirectly would remain after the object itself had disappeared, he placed a rectangular piece of a red wafer upon a white ground, and, having looked steadily at an object in its vicinity, the wafer disappeared, and, though the accidental color showed itself just before the wafer vanished, yet no trace of color was visible afterwards.

525. The insensibility of the retina to indirect impressions, has a singular counterpart in its insensibility to the direct impressions of attenuated light. When the eye is steadily directed to objects illuminated by a feeble gleam of light, it is thrown into a condition nearly as painful as that which arises from an excess of splendor. A sort of remission takes place in the conveyance of the impressions along the nervous membrane; the object naturally disappears, and the eye is agitated by the recurrence of excitements which are too feeble for the performance of its functions. If the eye had, under such a twilight, been making unavailing efforts to read, or to examine a minute object, the pain which it suffers would admit of an easy explanation; but, in the present case, it is the passive recipient of attenuated light, and the uneasiness which it experiences can arise only from the recurring failures in the retina to transmit its impressions to the optic nerve.

526. The preceding facts respecting the affections of the retina, while they throw considerable light on the functions of that membrane, may serve to explain some of those phenomena of the evanescence and reappearance of objects, and of the change of shape of inanimate objects, which have been ascribed by the vulgar to supernatural causes, and by philosophers to the activity of the imagination. If in a dark night, for example, we unexpectedly obtain a glimpse of any object, either in motion or at rest, we are naturally anxious to ascertain what it is, and our curiosity calls forth all our powers of vision. This anxiety,

however, serves only to baffle us in all our attempts. Excited only by a feeble illumination, the retina is not capable of affording a permanent vision of the object, and, while we are straining our eyes to discover its nature, the object will entirely disappear, and will afterwards appear and disappear alternately. The same phenomenon may be observed in day-light by the sportsman, when he endeavours to mark, upon the monotonous heath, the particular spot where moor-game has alighted. Availing himself of the slightest difference of tint in the adjacent heath, he keeps his eye steadily fixed upon it as he advances; but, whenever the contrast of illumination is feeble, he invariably loses sight of his mark, and, if the retina is capable again of taking it up, it is only to lose it again.

527. Mr. Herschel and Mr. South have lately described a curious fact, which has some analogy with the phenomena now described:—

528. ‘Another singular method,’ they remark, ‘of obtaining a view, and even a rough measure of the angles of stars of the last degree of faintness, has often been resorted to, viz. to direct the eye to another part of the field. In this way a faint star, in the neighbourhood of a large one, will often become very conspicuous, so as to bear a certain illumination, which will yet totally disappear, as if suddenly blotted out, when the eye is turned full upon it, and so on, appearing and disappearing alternately, as often as you please. The lateral portions of the retina, less fatigued by strong lights, and less exhausted by perpetual attention, are probably more sensible to faint impressions than the central ones, which may serve to account for this phenomenon.’

529. ‘As it is with much diffidence,’ observes Dr. Brewster, ‘that I venture to controvert any opinion entertained by Mr. Herschel, I have been at some pains to investigate the subject experimentally. I was at first disposed to ascribe the evanescence of the faint star solely to the same cause as the evanescence of faintly illuminated surfaces, and the reappearance of the star by indirect vision to the circumstance of the retina recovering its tone, by contemplating another object sufficiently luminous for vision; but this opinion was not well founded.’

530. ‘If a given quantity of light, which is unable to afford a sustained impression when expanded over a surface, is concentrated into a luminous point, it is still less fitted for the purposes of vision. It then acts upon the retina somewhat in the same way as a sharp point does upon the skin. The luminous point will alternately vanish and reappear; and, if the retina is under the influence of a number of such points, it will be thrown into a state of painful agitation. The same effect is produced by a sharp line of light; the retina is, in this case, thrown into a state of undulation, so as to produce an infinite number of images parallel to the luminous line; and, when this line is a narrow aperture held near the eye, a sheet of paper, to which it is directed, will appear covered with an infinity of broken serpentine lines parallel to the aperture. When the eye is steadfastly fixed for some time upon the parallel lines which are generally used to represent the sea in maps, the lines will all break into

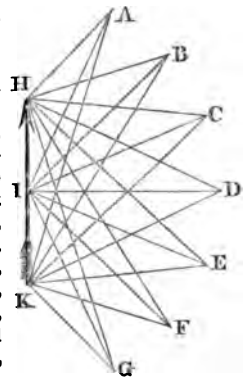
portions of serpentine lines, and red, yellow, green, and blue tints will appear in the interstices of them.

531. ‘The evanescence of stars, therefore, of the last degree of faintness, must be ascribed, both to their deleterious action upon the retina as points of light, and to the insufficiency of their light to maintain a continued impression upon the retina.’

532. When the eye is adjusted to the distinct perception of an object placed in the axis of vision, an object placed out of the axis cannot be seen with the same distinctness, both from the pencils not being accurately converged upon the retina, and from the expansion of the image, which, as we have already described, accompanies indirect vision. A luminous point, therefore, seen indirectly, swells into a disc, and thus loses its sharpness, and acts upon a greater portion of the retina. In order to determine whether this expansion, and the image of the luminous point, was the cause of its superior visibility, I turned my eye full upon a luminous point till it ceased to be visible; and then, re-adjusting my eye so as to swell the point into a circular disc by direct vision, I invariably found that its visibility was instantly increased. If this explanation of the phenomenon be the correct one, the practical astronomer may, with direct vision, obtain a clearer view of minute and faint stars, either by putting the telescope out of its focus, or by adjusting his eye to nearer objects.’—See *Brewster's Journal for September 1825*.

533. The peculiar phenomena that result from vision are too important to be passed unnoticed here. The rays of light being emitted or reflected from a visible object in all directions, it must be plain that some of them from every part of it must reach the eye. Thus the object H K, in the annexed engraving, is visible to an eye in any part where the rays H A, H B, H C, H D, H E, H F, H G, K A, K B, K C, K D, K E, K F, K G, I A, I B, I C, I D, I E, I F, and I G, can come. But, though rays are reflected from every point of the object to every part of the circumambient space, yet it is evident that only those rays which pass through the pupil of the eye can affect the sense; and those rays also give the ideas of color, according to the properties of those bodies which transmit or reflect them.

534. As the direction in which the extremepencils of light cross each other in the eye bears a due proportion to the angle in which they are transmitted from the object to the eye, it is evident that the image formed upon the retina will be proportioned to the apparent magnitude; and thus we have our first ideas of the size and



distance of bodies, which, however, in many cases, are corrected by experience. The nearer any object is to the eye, the larger is the angle by which it will appear in the eye, and therefore the greater will be the seeming magnitude of that body. In fig. 4 let AB be an object viewed directly by the eye QR . From each extremity draw the lines AN and BM , intersecting each other in the crystalline humor at I . Then draw the line IK in the direction in which the eye is supposed to look at the object. The angle AIK is then the optical or visual angle, and the line IK is called the optical axis, because it is the axis of the lens or crystalline humor continued to the object.

535. The apparent magnitude of objects then, depending thus on the angle under which they are seen, will evidently vary according to their distances. Thus different objects, as AB , CD , EF , the real magnitudes of which are very unequal, may be situated at such distances from the eye as to have their apparent magnitudes all equal; for if they are situated at such distances that the rays AN , BM , shall touch the extremities of each, they will then appear all under the same optical angle, and the diameter MN of each image on the retina will consequently be equal.

536. In the same manner objects of equal magnitude, situated at unequal distances, will appear unequal. For let AB and GH , two objects of equal size, be placed before the eye at different distances IK and IS ; draw the lines GP and HO , crossing each other in I ; then OP , the image formed by the objects GH on the retina, is evidently of a greater diameter than the image MN , which represents the object AB ; in other words the object GH will appear as large as an object of the diameter TV situated at the same place as the object AB .

537. To render the subject still clearer, suppose the object HK , fig. 5, to be at 100 yards distance, it will form an angle in the eye at A . At 200 yards distance the angle it makes will be twice as small in the eye at B . Thus, to whatever moderate distance the object is removed, the angle it forms in the eye will be proportionably less, and therefore the object will be diminished in the same proportion.

538. Hence it follows that objects situated at different distances, whose apparent magnitudes are equal, are to each other as their distances from the eye; and, by the same rule, equal objects situated directly before the eye have their apparent magnitudes in a reciprocal proportion to their distances.

539. This last proposition must, however, be received with some allowance; for it is only applicable to very distant objects, and to those where the sense is not corrected by the judgment. For, if the objects are near, we do not judge of their magnitude according to the visual angle. Thus, if a man of six feet high is seen at the distance of six feet under the very same angle as a dwarf of only two feet high, at the distance of two feet, still the dwarf will not appear as large as the man, because the sense is corrected by the judgment. In most cases, however, where the distance is considerable, the rule will be found accurate.

540. If the eye is placed above a horizontal

plain, the different parts of this plain will appear elevated in proportion to their distance, till at length they will appear on a level with it. For, in proportion as the different parts are more distant, the rays which proceed from them to form angles with the optical axis IK , fig. 4, more and more acute, and at length become almost parallel. This is the reason why, if we stand on the sea-shore, those parts of the ocean which are at a great distance appear elevated; for the globular form of the earth is not perceptible to the eye, and, if it was, the apparent elevation of the sea is far greater than the arch which a segment of the globe would form within any distance that our eyes are capable of reaching.

541. For the same reason, if a number of objects are placed on the same plain, and at the same height below the eye, the more distant will appear taller than the others; and if the same objects are placed on a similar plane above the eye, the more distant will appear the lowest.

542. The distant parts of a long wall, for the same reason, appear to a person who stands near one end to curve or incline towards him. In the same manner, the high wall of a lofty tower seems to a spectator placed directly under it to bend over him, and threaten him with instant destruction. If any person who wishes to try the experiment will lie down on his back in a situation of this description, at the distance of five or six feet from the wall of which he contemplates the tremendous height, he will immediately be made sensible of the phenomenon.

543. If the distance between two objects forms an invisible angle, the objects, though in reality at some distance from each other, will appear contiguous. This is assigned by some astronomers as the reason why the ring or belt of Saturn appears as one mass of light, while they contend that it is formed from a number of little stars or satellites ranged within a certain distance of each other.

544. If the eye is carried along as in a boat, without being sensible of its own motion, the objects which are stationary on each side will appear to move in a contrary direction. Thus we attribute to the sun and the other heavenly bodies a diurnal motion, which only affects the earth which we inhabit.

545. If two or three objects at a considerable distance, and on which the eye of the spectator is fixed, move with equal velocity past a third object which is at rest, the moving objects will appear to be actually at rest, and that which is really stationary will appear in motion. Thus the clouds which pass over the face of the moon appear at rest, while the moon itself appears to proceed rapidly along in an opposite direction. This happens because the eye, which is fixed upon the clouds, follows their motion mechanically, and therefore the moon appears to move and not the clouds, as in the boat we do not perceive its motion, but conceive the banks are retiring behind us.

546. If the centre of the pupil, that is, the optic axis, is directed along the surface of any slender object in a perfectly straight line, this line will appear only a point, because, in fact, the extremities only are visible.

547. An extended and distant arch, viewed

by an eye which is exactly in the same line, will appear as a plane surface, because, all the parts appearing equally distant, the curvature will not be perceived.

548. If a circle is viewed obliquely it will appear an oval, because the diameter which is perpendicular to the eye is shortened; in other words, the rays which proceed from the extremities form an angle so much the more acute as the obliquity is greater; on the contrary the diameter which is parallel to the eye is apparently extended.

549. We are indebted to S. L. Kent, Esq., honorary secretary of the London Institution, for the following very important facts, which tend materially to illustrate the real arrangement of the *prismatic spectrum*, as it serves to reduce the number of colors to three; while Dr. Wollaston's latest experiments would indicate the number four, as their ultimate component parts.

550. The prism used in these experiments was five inches long, and the side planes one inch broad; the lens was six inches in diameter, having a focus of two feet three inches; and it was found requisite that the diameter of the lens should exceed the length of the prism in order to insure a good spectrum.

551. Experiment 1.—Mr. Kent threw the colors of the prism on a screen eleven feet distant; and having placed the lens between them, and only two inches from the prism, as in fig. 6, he found the prismatic colors magnified and in the same order, to the dimension of two feet six inches in width, and one foot three inches in depth. In this case the sun's rays were admitted through a Venetian blind; but, when admitted through a hole in a shutter of five inches by four, the dimension was only two feet by nine inches.

552. Experiment 2.—Having placed the lens at the distance of two feet six inches from the prism, as in fig. 7, the figure of the prism was clearly defined, but without exhibiting any prismatic colors whatever on the screen.

553. Experiment 3.—He placed the lens three feet from the prism, as in fig. 8, which produced only the figure of the prism having the violet ray at the bottom and the yellow above.

554. Experiment 4.—When the lens was five feet from the prism, as in fig. 9, the figure of it was distinctly seen with the prismatic colors reversed.

555. Experiment 5.—Mr. Kent placed the lens behind the prism, as in fig. 10, and threw the sun's rays on it at its focal distance, two feet three inches, when the prismatic colors were increased, both in brilliancy and magnitude, considerably more than in the first experiment.

556. Experiment 6.—The lens was put within the focal distance of the screen, as in fig. 11, when a small figure of the prism was seen very bright, but without any prismatic color.

557. Experiment 7.—Having placed the lens as in the second experiment, no prismatic spectrum was produced, but a perfect spectrum of the prism in a strong white light; Mr. Kent then placed another prism in the focus of the lens, as in fig. 12, which produced three colors only, viz. yellow, of a greenish tint, red, and

deep violet. Wishing to ascertain if those three colors were neutral, he tried them with a third prism, and found not the slightest alteration; and, having placed a card so as to receive them, he found, on giving it a whirling motion, that the colors were entirely lost.

558. In the most perfect form of the *phantasmagoria lantern* the sliders are made opaque, except where the figures are introduced, the glass being covered, in the light parts, with a more or less transparent tint, according to the effect required. Several pieces of glass may also be occasionally placed behind each other, and may be made capable of such motions as will nearly imitate the natural motions of the objects which they represent. The figures may also be drawn with water colors on their paper, and afterwards varnished. By removing the lantern to different distances, and altering at the same time more or less the position of the lens, the image may be made to increase or diminish, and to become more or less distinct at pleasure, so that to a person unaccustomed to the effects of optical instruments the figures may appear actually to advance and retire. In reality, however, these figures become much brighter as they are rendered smaller, while in nature the imperfect transparency of the air causes them to appear fainter when they are remote than when they are near: this imperfection might be easily remedied by the interposition of some semi-opaque substance, which might gradually be caused to admit more light as the figure becomes larger, or by uncovering a larger or smaller portion of the lamp, or of its lens. Sometimes, by throwing a strong light upon the actual opaque object, or on a living person, its image is formed on the curtain, retaining its natural motions; but in this case the object must be considerably distant, otherwise the images of its nearer and remoter parts will never be sufficiently distinct at once, the refraction being either too great for the remoter, or too small for the nearer parts: and there must also be a second lens, placed at a sufficient distance from the first to allow an inverted image to be formed between them, and to throw a second picture of this image on the screen in its natural erect position; unless the object be of such a nature that it can be inverted without inconvenience. This effect was very well exhibited at Paris by Robertson; he also combined with his pictures the shadows of living objects, which imitate tolerably well the appearance of such objects in a dark night, or by moon-shine; and, while the room was in complete darkness, concealed screens were probably let down in various parts of it, on which some of the images were projected; for they were sometimes actually situated over the heads of the audience.

559. Dr. Young's suggestions may be thus illustrated:—The light of the lamp A, fig. 13, is thrown by the mirror B and the lenses C and D on the painted slider at E, and the magnifier T forms the image on the screen at G. This lens is fixed to a slider, which may be drawn out of the general support or box H: and, when the box is drawn back on its wheels, the rod I K lowers the point K, and by means of the rod K L adjusts the slider in such a manner that the

image is always distinctly painted on the screen G. When the box advances towards the screen G, in order that the images may be diminished and appear to vanish, the lens F suffers the screen M to fall and intercept a part of the light. The rod KN must be equal to IK, and the point I must be twice the focal length of the lens T, before the object, L being immediately under the focus of the lens. The screen M may have a triangular opening, so as to uncover the middle of the lens only, or the light may be intercepted in any other manner.

560. That the rays of light flow in all directions from different bodies, without interrupting one another, is plain from the following experiments:—Make a little hole in a thin plate of metal, and set the plate upright on a table, facing a row of lighted candles standing near together; then place a sheet of paper or pasteboard at a little distance from the other side of the plate, and the rays of all the candles, flowing through the hole, will form as many specks of light on the paper as there are candles before the plate; each speck as distinct and large as if there were only one candle to cast one speck; which shows that the rays do not obstruct each other in their motions, although they all cross in the same hole.

561. If three pieces of paper are fixed against the wall of a room at equal distances, at the height of the eye, the operator placing himself directly before them at a few yards distance, and the right eye being closed, he will perceive with his left only two of them,—suppose the first and second; let the position of the eye be altered, and the first and third will be seen; if altered a second time, the second and third; but never the whole three together.

562. An *artificial halo* may be formed by placing a candle on one side of a glass receiver, and, the spectator having placed himself at a distance on the other side, let the air be exhausted, and the light of the candle will be refracted in circles of various colors like the halo which encircles the sun.

563. Opticians sometimes grind a glass mirror concave in one direction only, or longitudinally; it is in fact a concave portion of a cylinder, the breadth of which may be considered that of the mirror. A person looking at his face in this mirror, in the direction of its concavity, will see it curiously distorted in a very lengthened appearance; and, by turning the cylindrical mirror a quarter round, his visage will appear distorted in another way, by an apparent increase in width only. If in a very near situation before it you put your finger on the right hand side of the nose, it will appear the same in the mirror; but if in a distant situation, somewhat beyond the centre of concavity, you again look at your face in the mirror, your finger will appear to be removed to the other side.

564. The *thaumatrope*, or wonder-turner, a very ingenious philosophical toy, invented we believe by Dr. Paris, is founded on the well known optical principle that an impression upon the retina continues for about the eighth part of a second after the object which produced it is withdrawn. The luminous rings formed by the whirling of a burning stick in the dark are well

known, and Homer has availed himself of the same principle in his description of the lengthened shadow of the flying javelin.

565. The thaumatrope consists of a number of circular pieces of card, about two inches and a half in diameter, which may be twirled round with great velocity by the application of the fingers to pieces of silk string attached to two opposite points of their circumference. On each side of the card is painted a part of a picture, so that, if we could see both sides at once, the two parts of the picture will form a whole picture. For example, let us suppose a card on one side of which is a cage, and on the other a bird. If we now take hold of each of the silk strings, and put it into a twirling motion, the bird and the cage will appear to the eye at the same moment, in consequence of the impression of each continuing on the retina for a short space of time. The following are some of the other devices on the cards of the thaumatrope:—

A rose-tree, with a garden-pot on the reverse.

A horse, with a man on the reverse.

A leafless branch, which becomes verdant on the twirling of the card.

A female in one dress on one side and another dress on the other.

The body of a Turk, with his head on the reverse.

Harlequin and Columbine on different sides, appear together by the revolution of the card.

A comic head on one side, which, on turning round, becomes invested with a wig.

A man sleeping, and awakened by being turned round.

566. The principle of the thaumatrope may be extended to many other devices. Parts of a sentence may be written on one side, and the rest of the sentence on the other; and we may even put halves of the letters or words on one side and the other halves on the other side. This method of breaking down letters or words or sentences may be varied ad infinitum, and will furnish us with a variety of rotatory cyphers.

567. Those who have used the thaumatrope must have been dissatisfied with the general effect of the two combined pictures. There is a hobbling motion, arising from the imperfection of the method adopted to produce the rotatory motion, which entirely destroys the effect; and it is manifest that the rotatory motion should be produced by quite different means.

568. If strings are adopted they ought to be attached to the circular pieces of card so that the axis of rotation should be in the plane of the card; but a solid axis of rotation is decidedly preferable, and will produce much more pleasing combinations.

569. A curious optical deception may be thus produced. It is to exhibit an erect object which, when placed near a hole in a card, will appear to be on the other side, and also inverted and magnified. Let a card be perforated with a small hole, and placed opposite a white wall or window, the eye of the observer being situated on the other side of the card. A pin being then placed between the eye and card will be seen on the other side of the aperture, inverted and magnified as already described. The reason

of this is, as M. Le Cat has observed, that the eye in this case sees only the shadow of the pin on the retina; and, since the light which is stopped by the upper part of the pin or its head comes from the lower part of the white wall or window, whilst that which is stopped by the lower end of the pin comes from the upper part, the shadow must necessarily appear inverted with respect to the object.

570. Another variation of Le Cat's experiment is as follows:—Take a common pin and hold it in any position near the eye, so that the observer sees reflected from its head a faint circle of

light; then hold a second pin opposite to it, and an inverted image of the one pin will be seen in the head of the other. If the head of the first pin is round and well polished, the inverted and magnified image of the other will be more distinct. In this form of the experiment a diverging pencil of light, from the window or a candle, replaces the diverging pencil which proceeds from the perforation in the card, and of course produces the same effect. The little round knob by the pressure upon which the case of a watch is often opened will answer better than the finest pin head.

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T

OPTIMACY, *n. s.* } *Lat. optimates.* Nobility; the body of nobles; one of the divisions of the Roman people: optimity, the state of being best.

In this high court of parliament there is a rare co-ordination of power, a wholesome mixture betwixt monarchy, *optimacy*, and democracy. *Howel.*

OPTIMATES, in ancient history, a political party among the Roman people, opposed to the populares. They were warm supporters of the dignity of the chief magistrates and promoters of the senatorial power; whereas the populares boldly stood up for the rights of the people, pleaded for larger privileges, and labored to bring matters nearer to a level. Cicero says, that the optimates were the best citizens, who wished to deserve the approbation of the better sort; and that the populares courted the favor of the populace, not so much considering what was right, as what would please the people, and gratify their own thirst of vain glory and empty applause.

OPTIO, an officer in the Roman army, an assistant or lieutenant to every centurion; so called because he was the choice or option of the centurion in later times: at first, however, he had been chosen by the tribune, or chief commander of the legion. These optiones are also sometimes called succenturiones and tergiductories; the last name was given them because their post was in the rear of the company. Some authors mention suboptiones, or sublieutenants.

OPTION, *n. s.* *Lat. optio.* Choice; election.

Transplantation must proceed from the *option* of the people, else it sounds like an exile; so the colonies must be raised by the leave of the king, and not by his command. *Bacon.*

He decrees to punish the contumacy finally, by assigning them their own *options*. *Hammond.*

Which of these two rewards we will receive, he hath left to our *option*. *Smalbridge.*

OPTION, in ecclesiastical polity. When a new suffragan bishop is consecrated, the archbishop of the province, by a customary prerogative, claims the collation of the first vacant benefice, or dignity, in that see, according as he shall choose; which choice is called the archbishop's option. But if the bishop dies, or is translated, before the incumbent of the promotion chosen by the archbishop die or be removed, it is generally supposed that the option is void; as the granter, singly and by himself, could not convey any right or title beyond the term of his continuance in that see. And, if the archbishop dies before the voidance happen, the right of filling up the vacancy shall go to his executors or administrators.

OPULENCE, *n. s.* } *Fr. opulence; Ital. Op'ulency, } opulenza; Port. Span. Op'ulent, adj. } and Lat. opulentia. Affluence; riches; splendid style of living: opulent is, wealthy; rich; affluent.*

It must be a discovery of the infinite flatteries that follow youth and *opulency*. *Shakespeare. Timon.*

He made him his ally, and provoked a mighty and *opulent* king by an offensive war in his quarrel. *Bacon.*

After eight years spent in outward *opulency* and inward murmur, that it was not greater; after vast sums of money and great wealth gotten, he died unlamented. *Clarendon.*

To begin with the supposed policy of gratifying only the rich and *opulent*:—does our wise man think that the grandee whom he courts does not see through all the little plots of his courtship? *South.*

He had been a person not only of great *opulency*, but authority. *Atterbury.*

There in full *opulence* a banker dwelt,
Who all the joys and pangs of riches felt;
His side-board glittered with imagined plate,
And his proud fancy held a vast estate. *Swift.*
How few can rescue *opulences* from want! *Young.*

OPUNTIA, the prickly pear tree, a species of cactus; see **CACTUS**. The fruit of the opuntia is remarkable for coloring the juices of living animals, though it appears not to be poisonous or even hurtful to the body. The prickly pear grows in great abundance about Carolina; and, cochineal insects are found upon it, though no attempt has yet been made to cure them for use as the Spaniards do.

OR, *conj.* *Sax. oðen; Goth. odr; Teut. oder.* Other; either (of both which it is used as a contraction); before a disjunctive particle denoting choice, distribution, and sometimes opposition.

Learn before thou speak, and use physick *or* *ever* thou be sick. *Eccles. xviii. 19.*

The dead man's knell
Is there scarce asked, for whom; and good men's lives

Expire before the flowers in their caps,
Dying *or* ere they sicken. *Shakespeare. Macbeth.*

How great soever the sins of any unreformed person are, Christ died for him because he died for all; only he must reform and forsake his sins, or else he shall never receive benefit of his death. *Hammond.*

For thy vast bounties are so numberless,
That them *or* to conceal, or else to tell,
Is equally impossible. *Conway.*

Or we go to the declaration of this psalm, it shall be convenient to shew who did write this psalm. *Fisher.*

Inquire what the ancients thought concerning this world, whether it was to perish *or* no? whether to be destroyed *or* to stand eternally? *Barnet.*

He my muse's homage should receive,
If I could write, *or* Holles could forgive. *Garth.*

At Venice you may go to any house either by land *or* water. *Addison.*

By intense study, *or* application to business that requires little action, the digestion of foods will soon proceed more slowly, and with more uneasiness. *Blackmore.*

Every thing that can be divided by the mind into two *or* more ideas is called complex. *Watts.*

The restless fry
Run bustling to and fro with foolish haste
In search of pleasures vain that from them fly,
Or which obtained the catiffs dare not taste;
When nothing is enjoyed, can there be greater waste? *Thomson.*

Speak thou, whose thoughts at humble peace
repine,
Shall Wolsey's wealth with Wolsey's end be thine?
Or livest thou now with safer pride content,
The wisest justice on the banks of Trent? *Johnson.*
But the sound of the church-going bell
These valleys and rocks never heard,

Never sighed at the sound of a knell,
Or smiled when a sabbath appeared.

Cowper.

A fourth as marble, statue-like and still,
Lay in a breathless, hushed, and stony sleep;
While, cold and pure, as looks a frozen rill,
Or the snow minaret on Alpine steep,
Or Lot's wife done in salt,—or what you will.

Byron.

Was it the squire, for killing of his game? or
Covetous parson, for his tithes distraining?
Or roguish lawyer, made you lose your little
All in a lawsuit?

Canning.

OR, *n. s.* Fr. *or.* Gold; an heraldic term.
The showery arch
With listed colours gay, *or*, azure, gules,
Delights and puzzles the beholders' eyes.

Philips.

OR, the French word for gold, by which this metal is expressed in heraldry. In engraving it is denoted by small points all over the field or bearing. See HERALDRY.

ORA, in antiquity, was a term equivalent to an ounce; but it has been much debated among antiquaries, whether the ora was a coin, or only money of account. Dr. Hickee says, that the mode of reckoning money by marks and oras was never known in England till after the Danish invasions; and from the old nummular estimates, among the principal Gothic states upon the Baltic, it appears that the ora and solidus were synonymous terms, and that the ora was the eighteenth part of the mark. From several Danish laws, it likewise appears that the Danish ora, derived by corruption from aureus, was the same as the Frank solidus of 12*d.* As a weight the ora was regarded as the uncia or unit, by which the Danish mark was divided; and in Doomsday book the ora is used for the ounce, or the twelfth part of the nummular Saxon pound, and the fifteenth of the commercial: as a coin, it was an aureus, or the Frank solidus of 12*d.* There was another ora mentioned in the rolls of the twenty-seventh of Henry III. the value of which was sixteen pence; and this was probably derived from the half mancus of the Saxons. Such, in all appearance, was the original of these two oras; as there were no aurei of that period to which these two denominations of money of sixteen and twelve pence can possibly be ascribed. The name ora distinguishes the gold coins in several parts of Europe to this day. The Portuguese *moidore* is nothing else but *moeda d'oro*, from the Latin *moneta de auro*; the French *Louis d'ores* come from the same use of the word, and owe their appellation to the ora. See *Clarke on Coins*.

ORACH. See ATRIPLEX.

ORACLE, *n. s. & v. n.* } Fr. *oracle*; Belg.
ORACULAR, *adj.* } and Teut. *orakel*;
ORACULOUS, } Ital. Span. and Port.
ORACULOUSLY, *adv.* } *oraculo*; Lat. *ora-*
ORACULOUSNESS, *n. s.* } *culum* (ab *oro*, to

speak). Something delivered by superior or supernatural wisdom; the place where, or person by whom, such communications are delivered: to utter oracles: oracular and oraculous, mean uttering or resembling oracles; the adverb and noun substantive corresponding.

The main principle whereupon our belief of all things therein contained dependeth, is, that the Scriptures are the *oracles* of God himself. *Hooker.*

Why, by the verities on thee made good,
May they not be my *oracles* as well,
And set me up in hope? *Shakspeare. Macbeth.*
God hath now sent his living *oracle*
Into the world to teach his final will,
And sends his spirit of truth henceforth to dwell,
In pious hearts an inward *oracle*,
To all truth requisite for men to know. *Milton.*

No more shalt thou by *oraceling* abuse
The gentiles. *Id.*

Thy counsel would be as the *oracle* of
Urim and thummim, those *oraculous* gems
On Aaron's breast, or tongue of seers old
Infallible. *Id. Paradise Regained.*

The testimonies of antiquity, and such as pass *oraculously* amongst us, were not always so exact as to examine the doctrine they delivered.

Brown's Vulgar Errors.

Though their general acknowledgments of the weakness of human understanding look like cold and sceptical discouragements; yet the particular expressions of their sentiments are as *oraculous* as if they were omniscient. *Glennville's Scopsis.*

Here Charles contrives the ordering of his states,
Here he resolves his neighb'ring princes' fates;
What nation shall have peace, where war be made,
Determined is in this *oraculous* shade. *Waller.*

Hence rise the branching beech and vocal oak,
Where Jove of old *oraculously* spoke. *Dryden.*

He spoke *oraculous* and sly,
He'd neither grant the question, nor deny. *King.*

There mighty nations shall enquire their doom,
The world's great *oracle* in times to come. *Pope.*
They have something venerable and *oracular*, in
that unadorned gravity and shortness in the expression. *Id.*

The' *oraculous* seer frequents the Pharian coast,
Proteus a name tremendous o'er the main. *Id.*

A graver coxcomb we may sometimes see,
Quite as absurd, though not so light as he:
A shallow brain behind a serious mask,
An *oracle* within an empty cask. *Cowper.*

ORACLE, in sacred history, is sometimes used for the mercy-seat, or the cover of the ark of the covenant; and by others it is taken for the sanctuary, or for the most holy place, wherein the ark was deposited. Among the Jews we may distinguish several sorts of oracles. They had first oracles that were delivered *viva voce*; as when God spake to Moses face to face, as one friend speaks to another. (Numb. xii. 8.) 2. Prophetic dreams sent by God: as the dreams which God sent to Joseph, and which foretold his future greatness (Gen. xxxvii. 5, 6). 3. Visions; as when a prophet in an ecstasy, being neither properly asleep nor awake, had supernatural revelations. (Gen. xv. 1; xvi. 2) 4. The oracle of Urim and Thummim, which was accompanied with the ephod or the pectoral worn by the high-priest, and which God had endued with the gift of foretelling things to come (Numb. xii. 6. Joel ii. 28.) This manner of enquiring of the Lord was often made use of, from Joshua's time to the erection of the temple at Jerusalem. Fifthly, After the building of the temple, they generally consulted the prophets, who were frequent in Judah and Israel. From Haggai, Zechariah, and Malachi, who are the last

of the prophets that have any of their writings remaining, the Jews assert that God gave them what they call Bathkol, the daughter of the voice, which was a supernatural manifestation of the will of God, performed either by a strong inspiration or internal voice, or else by a sensible and external voice, which was heard by a number of persons sufficient to bear testimony of it. For example, such was the voice that was heard at the baptism of Jesus Christ. (Matth. iii. 17.)

ORACLE, among the heathens, was the answer, which the gods were supposed to give to those who consulted them upon any affair of importance. The credit of oracles was so great that in all doubts and disputes their determinations were held sacred and inviolable: whence vast numbers flocked to them for advice; and no business of importance was undertaken, scarcely any peace concluded, any war waged, or any new form of government instituted, without the advice and approbation of some oracle. The answers were given by the priest or priestess of the god who was consulted; and generally expressed in such dark and ambiguous phrases as might be easily wrested to prove the truth of the oracle whatever was the event. It is not, therefore, to be wondered at, that the priests who delivered them were in the highest credit and esteem, and that they managed this reputation so as greatly to promote their own advantage. They accordingly allowed no man to consult the gods before he had offered costly sacrifices, and made rich presents to them. And to keep up the veneration for their oracles, and to prevent their being taken unprepared, they admitted persons to consult the gods only at certain stated times; and sometimes they were so cautious that the greatest personages could obtain no answer at all.

The most ancient oracle was that of Dodona (see DODONA); but the most famous was that of DELPHI, to which article we also refer for further particulars on this subject, so famous in Pagan antiquity. Another celebrated one was the oracle of Trophonius, in the neighbourhood of Lebadia, a city of Boeotia, which was held in high estimation. It received its name from Trophonius, brother of Agamedes, who lived in a subterraneous dwelling near Lebadia, and pretended to the faculty of foretelling future events. He died in his cave, and was deified as an oracular god. This oracle owed its reputation to one Saon. Those who repaired to this cave for information were required to offer certain sacrifices, to anoint themselves with oil, and to bathe in a certain river: they were then clothed in a linen robe, took a honeyed cake in their hands, and descended into the subterraneous chamber by a narrow passage. Here it was that futurity was unfolded to them, either by visions or extraordinary sounds. The return from the cave was by the same passage, but the persons consulting were obliged to walk backwards. They generally came out astonished, melancholy, and dejected; hence the proverb, *Εἰς Τροφονίον μεμνῆσθαι*. The priests on their return placed them on an elevated seat, called the seat of Mnemosyne, where an account was taken of what they had seen and heard. They were then conducted to the chapel of good Genius by their companions,

where, by degrees, they recovered their usual composure and cheerfulness. Besides these three principal oracles of Greece, that of Amphiaras, at Oropus in Attica, was famous. It was so called from Amphiaras, the son of Oicleus, a man skilled in magic, the interpretation of dreams, &c., and who after his death was deified and delivered oracles in a temple erected to his divinity. They who applied to him for information were to purify themselves, offer sacrifice, fast twenty-four hours, abstain from wine two days, and make an offering of a ram to Amphiaras; on the skin of which they were to sleep, and see their destiny in a dream. Near the temple was Amphiaras's fountain, which was sacred, and the waters of it forbidden to be used for ordinary purposes. At Delos also there was an oracle of the Delian Apollo; in Milesia was that of the Branchidae; with others of less note, such as that of the camps at Lacedæmon, that of Nabarcha, and those of Chrysopolis, Claros in Ionia, Mallos, Patarea, Pella, Phaselides, Sinope, Orpheus's head, &c. Though the Romans consulted the Grecian oracles upon many occasions, and had few oracles in their own country, yet we must not omit mentioning the Cumæan oracles, which were delivered by the Sibyl of Cumæ. For an account of the Sibyls, see the article SIBYL. See also DÆMON and DÆMONIAC. Of the oracles of false gods there was a far greater number than our limits permit us to enumerate.

It has been generally held by the early writers in the Christian church, that oracles ceased at the birth of Jesus Christ: yet some have endeavoured to maintain the contrary, by showing that they were in being in the days of Julian, commonly called the Apostate, and that this emperor himself consulted them; nay, farther, say they, history makes mention of several laws published by the Christian emperors, Theodosius, Gratian, and Valentinian, to punish persons who interrogated them, even in their days; and that the Epicureans were the first who made a jest of this superstition, and exposed the roguery of its priests to the people. As we suspect most of the facts here asserted should be understood in a qualified sense, we shall discuss this point in as few words as possible, although it is undoubtedly a matter of some consequence. 1st, The question, properly stated, is not, whether oracles became extinct immediately on the birth of Christ, or from the very moment he was born? but, if they fell gradually into disesteem, and ceased, as Christ and his gospel became known to mankind? And that they did so is most certain, from the concurrent testimonies of the fathers, which, whoever would endeavour to invalidate, may equally give up the most respectable traditions and history of every kind. 2dly, But did not Julian the Apostate consult these oracles? We answer in the negative: he had indeed recourse to magical operations, but it was because oracles had already ceased; for he bewailed the loss of them, and assigned pitiful reasons for it; which St. Cyrill refuted, adding, that he never could have offered such, but from unwillingness to acknowledge that when the world had received the light of Christ, the dominion of the devil was at

an end. 3rdly, The Christian emperors do indeed seem to condemn the superstition and idolatry of those who were still for consulting oracles; but the edicts of those princes do not prove that oracles actually existed in their times, any more than that they ceased in consequence of their laws. It is certain that they were for the most part extinct before the conversion of Constantine. 4thly, Some Epicureans might make a jest of this superstition; however the Epicurean philosopher Celsus, in the second century, was for crying up the excellency of several oracles, as appears from Origen's seventh book against him.

ORÆA, certain solemn sacrifices of fruits which were offered in the four seasons of the year, in order to obtain mild and temperate weather. They were offered to the goddesses who presided over the seasons, who attended upon the sun, and who received divine worship at Athens.

ORAIISON, or } Fr. *oraison*; Lat. *oratio*,
OR'ISON, n. s. } Prayer; oral worship; adoration or supplication.

His daily *orisons* attract our ears.

Sandys on Job.

Nymph, in thy *orisons*

Be all my sins remembered.

Shakespeare. Hamlet.

My wakeful lay shall knock

At the' oriental gates, and duly mock

The early lark's shrill *orisons*, to be

An anthem at the day's nativity. *Crashaw.*

He went into St. Paul's church, where he had *orisons* and Te Deum sung. *Bacon's Henry VII.*

I have grieved to see poor misguided souls under the papacy measuring their *orisons* not by weight, but by number. *Hall.*

Lowly they bowed, adoring and began

Their *orisons* each morning duly paid. *Milton.*

So went he on with his *orisons*,

Which, if you mark them well, were wise ones. *Cotton.*

Business might shorten, not disturb her prayer;

Heaven had the best, if not the greater share:

An active life, long *oraisons* forbids,

Yet still she prayed, for still she prayed by deeds. *Dryden.*

Here at dead of night

The hermit oft, mid his *orisons*, hears

Aghast the voice of time-disparting towers. *Dyer.*

The midnight clock attests my fervent prayers,

The rising sun my *orisons* declares. *Harte.*

Most glorious orb! that wert a worship, ere

The mystery of thy making was revealed!

Thou earliest minister of the Almighty,

Which gladdened, on their mountain tops, the heart

Of the Chaldean shepherds, till they poured

Themselves in *orisons*! *Byron.*

O'RAL, *adj.* } Fr. *oral*; Lat. *os*, *oris*, the

O'RALLY, *adv.* } mouth. Delivered by the mouth or in speech: orally, by the mouth, without writing.

Oral tradition were incompetent without written monuments to derive to us the original laws of a kingdom, because they are complex, not orally traducible to so great a distance of ages. *Hale.*

Oral discourse, whose transient faults dying with the sound that gives them life, and so not subject to a strict review, more easily escapes observation.

Locke on Education.

St. John was appealed to as the living oracle of the church; and, as his *oral* testimony lasted the first century, many have observed, that by a particular providence several of our Saviour's disciples, and of the early converts, lived to a very great age, that they might personally convey the truth of the gospel to those times which were very remote. *Addison.*

ORAMALA, a town of the Sardinian states, in the Milanese province of Bobbio. It is situated on the declivity of a hill, at the foot of which flows the Staffora. Inhabitants 3100.

ORAN, or Warran, a considerable town in the province of Tlemsan or Tremecen, Algiers. The Spaniards commanded by cardinal Ximenes, took it in 1509, and retained possession of it till the period of the succession war, when, in 1708, the Algerines, perceiving it neglected, found means to obtain possession. The Spaniards, however, regained it in 1732, and retained it till a recent period, when they restored the town, retaining the castle of Mers al Kebeer. This place is built on the declivity and foot of a high mountain, which overlooks it from the north, and on the summit are built two fine, strong castles, one of which is that retained by the Spaniards. Dr. Shaw did not find here any Roman antiquities; but several beautiful churches have been built by the Spaniards. 170 miles south-west of Algiers. Long 0° 18' W., lat. 35° 50' N.

OR'ANGE, n. s. } Fr. *orange*; Lat. *auran-*

OR'ANGERY, } *tium* (ab *aureo colore*.—

OR'ANGEMUSK, } Ainsworth). A fruit or

OR'ANGETAWNEY, } fruit-tree; a species of *Ci-*

OR'ANGEWIFE. } *trus*, which see: an oran-

gery is, a place where oranges are raised: orange-musk, a species of pear: orange-tawney, a color resembling that of the orange: orange-wife (orange, and Sax. *pip*, Gothr *huif*, a woman's hood), a woman who sells oranges.

I will discharge it in your straw-coloured beard, your orange tawny beard. *Shakespeare.*

You wear out a good wholesome forenoon in hearing a cause between an *orangewife* and a fasset teller. *Id.*

The notary came aboard, holding in his hand a fruit like an *orange*, but of colour between *orange tawny* and scarlet, which cast a most excellent odour, and is used for a preservative against infection. *Bacon's New Atlantis.*

The ideas of *orange* colour and azure, produced in the mind by the same infusion of *lignum nephriticum*, are no less distinct ideas than those of the same colours taken from two different bodies. *Locke.*

A kitchen garden is a more pleasant sight than the finest *orangery*, or artificial green-house. *Spectator.*

Fine *oranges*, sauce for your veal, Are charming when squeezed in a pot of brown ale. *Swift.*

Baronets, or knights of Nova Scotia, are commonly distinguished from others by a ribbon of *orangetawney*. *Heylin.*

The punic granate oped its rose-like flowers; The *orange* breathed its aromatic powers. *Harte.*

ORANGE, in botany. See CITRUS.

ORANGE, *coloniz secundanorum*, an ancient post town of the department of Vaucluse, France; the chief place of a subprefecture containing 8000 inhabitants, and having an inferior court

of judicature, an agricultural society, and a communal college. It is situated in a magnificent plain, which is watered by the Aiques and a multitude of smaller streams. It is in general but badly built; the streets are narrow and close, but ornamented with handsome public fountains, the waters of which are excellent. Ptolemy calls it Aurosis Cavarum, as it was one of the four towns belonging to the Cavares. The Romans had possession of it for several centuries, and it is celebrated for the monuments of their power which are yet remaining. The Burgundians and Visigoths were the first that wrested it from the Romans; they were driven out by the kings of France of the first Race. During the wars, that were terminated by the treaties of Nimeguen and Ryswick, Louis XIV. seized upon Orange, and demolished its citadel. Formerly it was the capital of a principality of the same name, which was extinct before the revolution.

The manufactures of this town consist of handkerchiefs, printed calicoes, and serges. There are also silk mills and mills for grinding madder. The inhabitants carry on a trade in wine, brandy, truffles, saffron, honey, yellow wax, wool, madder, grain of all kinds, perfumery, gums, &c. About 400 yards from the town, on the road from Lyons to Marseilles, is a triumphal arch, almost entire, which was erected in memory of the victory of Marius and Catulus over the Cimbri. It is sixty-six feet broad and sixty feet high, pierced with three arcades, of which the centre is the largest, being designed for carriages. Fluted Corinthian columns rise on each side of the arcades, the middle ones supporting a triangular pediment, above which is an attic crowned with a beautiful cornice. There is not even in Rome itself a triumphal arch so magnificent as this. On a mountain in the neighbourhood there is still to be seen a theatre of Roman construction, in very good preservation, built in a semi-circle, and bounded by a wall still entire. It is 108 feet high and 300 feet broad, built of fine square stones, and decorated with two rows of arcades and an attic.

Orange is twenty-one miles north of Avignon; eighteen west of Charpentras; twelve south-west of Pont St. Esprit, and 483 south-east of Paris.

ORANGE, SEA, in natural history, a name given by count Marsigli to a very remarkable species of marine substance, which he denominates a plant. It is tough and firm in its structure, and in many things resembles the common fucus; but, instead of growing into the branched form which the generality of those substances have, it is round and hollow, and in every respect resembles the shape of an orange. It has, by way of root, certain very fine filaments, which fasten themselves to the rocks, or to shells, stones, or any thing else that comes in the way. From these there grows no pedicle; but the body of the orange, as it is called, is fastened by them to the rock, or other solid substance. The orange itself is usually of about three or four inches in diameter; and, while in the sea, is full of water, and even retains it when taken up. In this state it frequently weighs a pound and a half; but, when the water is let out, and it is dried, it be-

comes a mere membrane, weighing scarcely any thing. It is best preserved by stuffing it with cotton as soon as the water is let out of it, and then hanging it up to dry. Its surface is irregular and rough, and its color a dusky green on the outside, and a clearer, but somewhat bluish, green within; and its thickness is about an eighth part of an inch. When viewed by the microscope, it is seen to be all over covered with small glandules, or rather composed of them; for they stand so thick one by another as to leave no space between, and seem to make up the whole substance; so that it appears very like the rough shagreen skin used to cover toys. These are indeed so many hollow ducts, through which the sea-water finds a passage into the globe formed by this skin, and by these means it is kept always full and distended; on cutting it with a pair of scissors the water immediately runs out, and the skins collapse; but there is something extremely remarkable in this; for the whole substance, near the wounded place, is in motion, and seems as if alive, and sensible of the wound. The glandules are found full of water, and resembling small transparent bottles.

ORANGE-DEW, a kind of dew which falls in the spring-time from the leaves of orange and lemon trees, which is extremely subtle. M. De la Hire observing this, placed some flat pieces of glass under the leaves to receive it; and, having procured some large drops of it, was desirous of discovering what it was. He soon found that it was not a merely aqueous fluid, because it did not evaporate in the air; and that it was not a resin, because it readily and perfectly mixed with water: it was natural then to suppose it a liquid gum; but neither did this, on examination, prove to be the case; for, being laid on paper, it did not dry as the other liquid gums do. Whence he concluded that it was a kind of manna, which more detailed experiment proved to be the case.

ORANGE RIVER, a river of Southern Africa, in the Graaf Reynet, district of the Cape colony. It first flows north-west, but afterwards almost due west, till it falls into the Atlantic. In the east part of its course it forms the limit between the country of the Hottentots and Boshuanas; and on the south the banks present an entirely different character of animal and vegetable life from those on the north. Westward it passes a desert, in which waggon wheels sink, and can with the utmost difficulty be dragged along. The sand-stone rocks here rise in perpendicular walls to a vast extent. The heat is here very severe and scorching. After a course of about 600 miles, it falls into the Atlantic, lat. 28° 30' S.

ORANGE-TREE, in botany. See CITRUS.

ORANGE-FLOWERS are justly esteemed one of the finest perfumes; and, though little used in medicine, yet the water distilled from them is accounted stomachic, cordial, and carminative. The fruit is cooling, and good in feverish disorders, and particularly in diarrhœas. Orange-peel is an agreeable aromatic, proper to repair and strengthen the stomach, and gives a very grateful flavor to any infusions or tinctures into whose compositions it enters. It is particularly

useful in preparations of the bark; gives an agreeable warmth to the infusion; and, according to Dr. Percival, considerably increases its virtue. In the Philosophical Transactions there is a very remarkable account of a tree standing in a grove near Florence, having an orange stock, which had been so grafted upon, that it became, in its branches, leaves, flower, and fruit, three-formed: some emulating the orange, some the lemon or citron, and some partaking of both forms in one; and what was very remarkable, was, that these mixed fruits never produced any perfect seeds; sometimes there were no seeds at all in them, and sometimes only a few empty ones.

ORANG-OUTANG. See SIMIA.

ORATION, *n. s.*

ORATOR,

ORATOR'ICAL, *adj.*

ORATOR'ICALLY, *adv.*

ORATORY, *n. s.*

Fr. *oration*; Ital. *orazione*; Span. *oracion*; Lat. *oratio*. A formal speech; a regular or systematic harangue.

an orator is, he who delivers such an harangue: oratorical, relating to, or besitting, oratory or rhetoric; rhetorical: oratory, eloquence; rhetoric; exercise of eloquence; also (Fr. *oratoire*) a place devoted to prayer.

And for to don his rite and sacrifice
He eastward bath upon the gate above,
In worship of Venus, goddess of love,
Don make an auter and an *oratorie*.

Chaucer.

They began to erect to themselves *oratories* not in any sumptuous or stately manner, which neither was possible by reason of the poor estate of the church, and had been perilous in regard of the world's envy towards them.

Hooher.

Poor queen and son! your labour is but lost;
For Warwick is a subtle *orator*.

Shakspeare.

There shall I try,
In my *oration*, how the people take
The cruel issue of these bloody men. *Id.*

When a world of men
Could not prevail with all their *oratory*,
Yet hath a woman's kindness over-ruled. *Id.*

Each pasture stored with sheep feeding with sober security, while the pretty lambs, with bleating *oratory*, craved the dam's comfort.

Sidney.

In *oratory* affectation must be avoided as a pestilence.

Lord Herbert.

Do not omit thy prayers for want of a good *oratory* or place to pray in; nor thy duty for want of temporal encouragements.

Taylor.

By this kind of *oratory*, and professing to decline their own inclinations and wishes, purely for peace and unity, they prevailed over those who were still surprised.

Clarendon.

As when of old some *orator* renowned,
In Athens or free Rome, where eloquence
Flourished, since mute! to some great cause addressed,

Stood in himself collected; while each part,
Motion, each act, won audience. *Milton.*

Sighs now breathed

Unutterable, which the spirit of prayer
Inspired, and winged for heaven with speedier flight
Than loudest *oratory*. *Id. Paradise Lost.*

It would be altogether vain and improper in matters belonging to an *orator* to pretend to strict demonstration.

Wilkins.

Hammond's subjects were such as had greatest influence on practice, which he prest with most affectionate tenderness, making tears part of his *oratory*.

Fell.

Both *orators* so much renowned,
In their own depths of eloquence were drowned.

Dryden.

Oratory signifies a private place, which is deputed and allotted for prayer alone, and not for the general celebration of divine service.

Ayliffe's Parergon.

Come, harmless characters, that no one hit,
Come, Henley's *oratory*, Osborn's wit. *Pope.*

I have listened to an *orator* of this species, without being able to understand one single sentence.

Swift.

The former, who had to deal with a people of much more politeness, learning, and wit, laid the greatest weight of his *oratory* upon the strength of his arguments.

Id.

This gives life and spirit to every thing that is spoken, awakens the dullest spirits, and adds a singular grace and excellency both to the person and his *oration*.

Watts.

Where he speaks in an *oratorical*, affecting, or persuasive way, let this be explained by other places where he treats of the same theme in a doctrinal way.

Id.

It is said that a man must be born a poet, but it is in his power to make himself an *orator*; for, to be a poet requires a certain degree of strength and vivacity of mind; but that attention, reading, and labour, are sufficient to form an *orator*.

Chesterfield.

The business of *oratory* is to persuade, and to please is the most effectual step towards persuading.

Id.

In *oratory* the greatest art is to hide art. *Ars est celare artem.*

Sheridan.

ORATOR, among the ancient Romans, differed from a patronus: the latter was allowed only to plead causes on behalf of his clients; whereas the former might quit the forum and ascend the rostra or tribunal, to harangue the senate or the people. The orators had rarely a profound knowledge of the law, but they were eloquent, and their style was generally correct and concise. They were employed in causes of importance, instead of the common patrons. Similar to the Roman orators were the Grecian Rhetores. See RHETORES.

ORATOR, PUBLIC, an officer of very considerable dignity, and of some emolument, in the English universities. The public orator is the principal, and in many cases the only ostensible, agent for the university in all those matters or forms which are merely external. He carries on or superintends all correspondences which are calculated to promote the dignity, or raise the utility, of the seminary. He has little to do, indeed, with the internal government of the body, for which a variety of officers in different departments are appointed; but in all public affairs he is, as it were, the mouth of the whole; putting their deliberations into proper form, and communicating or publishing them, according to the intention of the university. Thus, if the whole university, or a committee appointed by them, by statute, or by the will of any particular benefactor, have, after a comparative trial, adjudged a prize to any person or persons, it is the business of the public orator to inform the successful parties of the issue of the trial. Again, if for singular learning, or for any remarkable good will shown to the university by any person or persons, the senate or convocation are pleased to declare their grateful sense of it, either by

conferring degrees, or otherwise, as they think fit, the public orator is to notify this intention to the person or persons concerned; and so in other cases.

Another part of the public orator's business is to present young noblemen, or those who take honorary degrees, *tanquam nobiles*, to the vice-chancellor: this he does in a Latin oration, of which the subject is generally a defence of that particular statute which allows the sons of noblemen, and some few others, to proceed to degrees before what is called the statutable time. In doing this, encomiums are made upon the learning and virtue of the noble candidate; a view is taken of the dignity of his ancient house; the honor is mentioned which has accrued to the university from the accession of such a member; and the oration concludes with promising great credit from his future conduct, as well as benefit from the influence of his rank in the state. These circumstances are deemed sufficient grounds for exempting the sons of noblemen from that tedious course of study through which the sons of commoners must all pass before they be thought worthy of academical honors.

ORATORIO, in the Italian music, a sort of sacred drama of dialogues; containing recitativos, duettos, trios, ritornellos, choruses, &c. The subjects of those pieces are usually taken from Scripture. Oratorios are greatly used in Rome in the time of Lent, and are now common in England. Menestrier attributes the origin of oratorios to the crusades, and says that the pilgrims returning from Jerusalem and the Holy Land, &c., composed songs, reciting the life and death of the Son of God, and the mysteries of the Christian faith, and celebrating the achievements and constancy of saints and martyrs. Others, with more probability, observe that the oratorio was an avowed imitation of the opera, with only this difference, that the foundation of it was always some religious or moral subject. Crescimbeni ascribes its origin to St. Philip Neri, who, in his chapel, after sermons, in order to allure young people to pious offices, had hymns and psalms sung by one or more voices. Among these spiritual songs were dialogues; and these entertainments, improving every year, gave rise in the seventeenth century to oratorios, so called from the place of their origin.

O R A T O R Y.

ORATORY has been defined the art of speaking well upon any subject, in order to persuade. The terms rhetoric and oratory, having no other difference but that one is taken from the Greek language, and the other from the Latin, may be used synonymously; but the case is not the same with respect to the words rhetorician and orator. For, although the Grecians used the former, both to express those who taught the art, and those who practised it, yet the Romans afterward, when they took that word into their language, confined it to the teachers of the art, and called the rest orators. And there seems to have been a sufficient reason for this distinction, since the art was the same in both, and might therefore go by either name: but the different province of rhetoricians and orators made it not proper that they should be called by different names. Besides, anciently, before rhetoric was made a separate and distinct art from philosophy, the same persons taught both. And then they were called not only rhetoricians but sophists. But, because they often employed their art rather to vindicate what was false and unjust, than to support truth and virtue, this disingenuous conduct, by which they frequently imposed upon weak minds, brought discredit both upon themselves and their profession. And therefore the word *sophist*, or *sophister*, has been more generally used in an ill sense, to signify one skilled rather in the arts of cavilling, than qualified to speak well and accurately upon any subject.

History of oratory.—The invention of oratory is by the Egyptians and the fables of the poets ascribed to Mercury. Quintilian says 'The faculty of speech we derive from nature; but the art from observation.' But no certain account can be given when, or by whom, this art first

began to be cultivated. We learn from Homer that the art was very early in high esteem among the Greeks, as that poet greatly celebrates Nestor and Ulysses for their eloquence. Quintilian says that afterwards Empedocles is the first upon record who attempted any thing concerning it. And he, by Sir Isaac Newton's account, flourished about 500 years after Troy was taken. Cicero says, 'Though some had spoken well before Corax and Tisias, yet none with order and method.' But Gorgias had a golden statue erected to him at Delphos, an honor conferred upon him only; and he is said to have been so great a master of oratory, that, in a public assembly, he would undertake to declaim immediately upon any subject proposed to him. He wrote, as Cicero informs us, in the demonstrative or laudatory way; which requires most of the sublime, and makes what Diodorus Siculus says of him the more probable, that 'he first introduced the strongest figures, members of periods opposite in sense, of an equal length, or ending with a like sound, and other ornaments of that nature.' And hence those figures which give the greatest force and lustre to a discourse were anciently called by his name. Cicero tells us farther that Thrasymachus and Gorgias were the first who introduced numbers into prose, which Isocrates afterwards brought to perfection. Quintilian likewise mentions Protagoras, Gorgias, Prodicus, and Thrasymachus, as the first who treated of common places, and showed the use of them. Plato wrote an elegant dialogue upon this subject, which is still extant, entitled *Gorgias*.

Isocrates was the most renowned of all Gorgias's scholars. Cicero extols him as the greatest master and teacher of oratory; 'whose school, like the Trojan horse, sent forth many great men.'

Aristotle was chiefly induced to engage in this province from an emulation of his glory. Quintilian says they both wrote upon the art, though there is no system of the former extant. But that of Aristotle is esteemed the best and most complete of any in the Greek language. In this age the Grecian eloquence appeared in its highest perfection. Demosthenes was a hearer both of Isocrates and Plato, as also of Isæus (ten of whose orations are yet extant); and by his surprising genius, and indefatigable industry, made such advantage of their precepts, that he has been always esteemed by the best judges the prince of Grecian orators. His great adversary and rival Æschines, after his banishment, is said to have gone to Rhodes, and employed his time there in teaching rhetoric. Theodectes and Theophrastus, both scholars of Aristotle, imitated their master in writing upon the art. And from that time the Greek philosophers, especially the stoics and peripatetics, applied themselves to lay down the rules of oratory; which Socrates had before separated from the province of a philosopher. There is preserved a treatise upon this subject, which some ascribe to Demetrius Phaleræus, though others, more probably, to Dionysius of Halicarnassus. Quintilian mentions several other rhetoricians in the following ages, who were likewise writers; as Hermagoras, Athenæus, Apollonius, Molo, Areus Cæcilius, Dionysius of Halicarnassus, Apollonius of Pergamus, and Theodore of Gadara. But of these nothing now remains upon the subject of oratory, except some tracts of Dionysius, who flourished in the reign of Augustus. But some eminent writers on this subject have appeared among the Greeks since the time of Quintilian, particularly Hermogenes, and Longinus, the author of the incomparable treatise of the Sublime.

It was long before the Romans cultivated this art, and not without difficulty at first. The reason was, that for several ages they were wholly addicted to military affairs. Therefore, so late as A. U. C. 592, when by the industry of some Grecians the liberal arts began to flourish in Italy, a decree passed the senate, by which all philosophers and rhetoricians were ordered to depart out of Rome. But in a few years after, when Carneader, Critolaus, and Diogenes, who were not only philosophers but orators, came ambassadors from Athens to Rome, the Roman youth were so charmed with the eloquence of their harangues, that they could no longer be stopped from pursuing the study of oratory. And, by a further acquaintance with the Greeks, it soon came into such esteem, that persons of the first quality employed their time and pains to acquire it. Seneca tells us, that Lucius Plotius, a Gaul, was the first who taught the art of oratory at Rome in Latin; which, Cicero says, was while he was a boy. Seneca adds, that this profession continued for some time in the hands of freed men; and that the first Roman who engaged in it was Blandus, of the equestrian order, who was succeeded by others; some of whose lives are extant, written by Suetonius, as many of the Grecians are by Philostratus and Eunapius. Quintilian likewise gives us the names of those Romans who wrote upon the art. 'The

first,' says he, 'who composed any thing upon the subject, was M. Cato the censor; and after him Antony the orator; which is the only work he has left, and that imperfect. Then followed some of less note. But he who carried eloquence to its highest pitch among us was Cicero; who has, likewise, by his rules, given the best plan both to practise and teach the art. Cornificius wrote largely upon the subject; Stertinius, and Gallio, the father, each of them something. But Celsus and Lenas were more accurate than Gallio: and in our times Virginius, Pliny, and Rutilius. Time has deprived us of most of the writers mentioned by Quintilian. But we have the less reason to regret this; inasmuch as, besides his Two Books of Invention, which Quintilian here calls his Books of Rhetoric, there are extant his Three Books of an Orator; one of Famous Orators; and another entitled The Orator; also his Topics, a preface concerning the best sort of Orators; and a treatise of the Parts of Oratory. Each of these treatises, whether we regard the justness and delicacy of the thoughts, the usefulness of the rules, or the elegance and beauty of the style, deserves to be frequently perused by all lovers of eloquence. But the four books to Herennius, which are published among Cicero's works, seem with good reason to be attributed to Cornificius.

Celsus, whom Quintilian places among the best rhetoricians, is also said to have taught oratory. His eight books of Medicine are yet extant, written in so beautiful a style as plainly shows him a master of eloquence. But Quintilian himself excelled all who went before him in diligence and accuracy as a writer. His Institutions are so comprehensive, and written with such exactness and judgment, that they are generally allowed to be the most perfect work of the kind. There were some other orators in the following ages, whose works are extant; but, as they contain nothing of moment, it is unnecessary to enumerate them. The archbishop of Cambray gives it as his opinion, that the method of forming the system of oratory is to collect it from the finest precepts of Aristotle, Cicero, Quintilian, Longinus, and other celebrated authors of antiquity.

Objects and divisions of oratory.—The business of oratory is to teach us to speak well; which, as Cicero explains it, is to speak justly, methodically, floridly, and copiously.

It consists of four parts; invention, disposition, elocution, and pronunciation. Every one who aims to speak well and accurately upon any subject, pursues such thoughts as seem most proper to explain and illustrate the thing upon which he designs to discourse. And, if the nature of it requires that he should bring reasons to confirm what he says, he not only seeks the strongest, and such as are like to be best received, but prepares to answer any objection which may be offered to the contrary. This is invention. After this he considers how he can best arrange those arguments which have occurred to his mind, that they may appear in the plainest light, and not lose their force by disorder and confusion. This is disposition. His next care is to give his thoughts an agreeable dress; by selecting the

most proper words, clearest expressions, smooth and harmonious periods, with other ornaments of style, as may best suit the nature of his subject, brighten his discourse, and render it most entertaining to his hearers. This is elocution. The last thing is to deliver what he has thus composed with a just and agreeable pronunciation. And daily experience convinces us how much this contributes both to engage the attention, and impress what is spoken upon the minds of the hearers.

PART I.

OF INVENTION.

I. Of invention in general; and particularly of common places, and the state of a cause.—Invention, in general, is the discovery of such things as are proper to persuade. To attain this end, the orator proposes three things: 1. To prove or illustrate the subject upon which he treats; 2. To conciliate the minds of his hearers, and to engage their passions in his favor; and, 3. As these require different kinds of arguments or motives, invention furnishes him with a supply for each of them. An argument, as defined by Cicero, is a reason which induces us to believe what before we doubted of. And, as different kinds of discourses require different arguments, rhetoricians have considered them two ways; in general, under certain heads, as a common fund for all subjects; and, in a more particular manner, as they are suited to demonstrative, deliberative, or judicial discourses.

Extensive knowledge is the noblest fund of invention. An orator, therefore, should be furnished with a stock of important truths, solid maxims, and a variety of knowledge, collected both from observation and acquaintance with the liberal arts; that he may not only be able to express himself in the most agreeable manner, but likewise to support what he says with the strongest and clearest arguments. But, as all have not the same opportunity to cultivate their minds with learning and knowledge, art has prescribed a method to lessen in some measure, these difficulties, and help every one to a supply of arguments upon any subject. And this has been done by common places, which Cicero calls the seats or heads of arguments, and, by a name from the Greek, topics. They are of two sorts, internal and external.

1. *Internal topics* arise from the subject upon which the orator treats; and are therefore distinguished from external, which he fetches from without, and applies to his purpose. Cicero and Quintilian make them sixteen; of which three comprehend the whole thing they are brought to prove, namely, definition, enumeration, and notation; of the remaining thirteen, some contain a part of it, and the rest its various properties and circumstances, with other considerations relating to it; these are, genus, species, antecedents, consequents, adjuncts, conjugates, cause, effect, contraries, opposites, similitude, dissimilitude, and comparison. Definition explains the nature of the thing defined, and shows what it is. Enumeration takes in all the parts of a thing. And from this we prove, that what

agrees to all the parts agrees to the whole. Notation, or etymology, explains the meaning or signification of a word. Genus contains under it two or more species of things, differing in nature. Species is that which comprehends under it all the individuals of the same nature. Antecedents are such things, as, being once allowed, others necessarily, or very probably, follow. Consequents are such things, as, being allowed, necessarily or very probably infer their antecedents. Adjuncts are separable properties of things, or circumstances that attend them. These are very numerous, and afford a great variety of arguments. They do not necessarily infer their subject; but, if fitly chosen, render a thing credible, and are a good ground for assent. Conjugates are words deduced from the same origin with that of our subject. By these the habit is proved from its acts. A cause is that by the force of which a thing does exist. There are four kinds of causes, matter, form, efficient, and end, which afford a great variety of arguments. The way of reasoning from them is to infer the effect from the cause. An effect is that which arises from a cause, therefore the cause is proved by it. Contraries are things, which, under the same genus, are at the utmost distance from each other; so that what we grant to the one we deny the other. Opposites are things, which, though repugnant to each other, yet are not directly contradictory: as, To love and to injure, to hate and to commend. They differ from contraries in this, that they do not absolutely exclude one another. Similitude is an agreement of things in quality. Dissimilitude is a disagreement of things in quality. Comparison is made three ways; for either a thing is compared with a greater, with a less, or with its equal. This, therefore, differs from similitude on this account, that the quality was considered in that, but here the quantity. From this account of common places, as laid down by the orators of ancient Greece and Rome, it is easy to conceive what a large field of discourse they open to the mind upon every subject. 'One who had no other aim,' says Dr. Blair, 'but to talk copiously and plausibly, by consulting them on every subject, and laying hold of all that they suggested, might discourse without end; and that too, though he had only the most superficial knowledge of his subject. But such discourse could be no other than trivial. What is truly solid and persuasive must be drawn from a thorough knowledge of the subject, and profound meditation on it. They who would direct students of oratory to any other sources of argumentation, only delude them; and, by attempting to render rhetoric too perfect an art, they render it, in truth, a trifling and childish study.'

2. *External topics* are all taken from authorities, and have one general name, Testimony. All testimonies may be distinguished into two sorts, divine and human. A divine testimony, when certainly known to be such, is incontestable, and admits of no debate. Human testimonies, considered as furnishing the orator with arguments, may be reduced to three heads; writings, witnesses, and contracts. The occasion of dispute respecting written testimonies, which may afford

the orator an opportunity of displaying his abilities, may arise from five circumstances, viz. ambiguity, disagreement between words and intention, contrariety, reasoning, and interpretation. Of these it would be superfluous to give examples.

3. *Of the state of a controversy.*—The ancients, observing that the principal question or point of dispute in all controversies might be referred to some particular head, reduced those heads to a certain number, that both the nature of the question might thus be better known, and the arguments suited to it be discovered with greater ease. And these heads they call states. The number of these states both Cicero and Quintilian reduce to three; and tell us that three things may be enquired into in all disputes: Whether a thing is? what it is? and how it is?

II. *Of arguments suited to demonstrative discourses.*—These consist either in praise or dispraise; and, agreeably to the nature of all contraries, one of them will serve to illustrate the other. Either persons or things may be the subjects of praise.

1. In praising or dispraising persons, rhetoricians prescribe two methods: 1. To follow the order in which every thing happened that is mentioned in the discourse; 2. To reduce what is said under certain general heads, without a strict regard to the order of time. i. In pursuing the former method, the discourse may be very conveniently divided into three periods. The first of which will contain what preceded the person's birth; the second the whole course of his life; and the third what followed upon his death. ii. The other method is to reduce the discourse to certain general heads, without regarding the order of time. As if any one, in praising the elder Cato, should propose to do it, by showing that he was a most prudent senator, an excellent orator, and most valiant general.

1. In praising things, all beings inferior to man may be proper subjects for praise or dispraise; whether animate or inanimate; whether ideal or real; as virtues, vices, countries, cities, &c. But what chiefly claim the attention of the orator, as subjects of praise or dispraise, are the actions of men.

III. *Of arguments suited to deliberative discourses.*—This kind of discourse must have been very ancient; since, doubtless, from the earliest period of men conversing together, they deliberated upon their common interest, and offered their advice to each other. But neither those of the laudatory nor judicial kind could be introduced till mankind were settled in communities. The early practice of suatory discourses appears from sacred writ, where we find that, when Moses was ordered upon an embassy into Egypt, he would have excused himself for want of eloquence. And Homer represents the Greeks at the siege of Troy, as anxiously running to hear their generals harangue them. Nor is this part of oratory less conspicuous for its usefulness to mankind than for its antiquity; being highly beneficial either in councils, camps, or any societies of men. How many instances have we upon record, where the fury of an enraged multitude has been checked and appeased by the

prudent and artful persuasion of some particular person! The story of Menenius Agrippa, who pacified the commons of Rome, when they withdrew from the senators, and retired out of the city, by his fable of the Belly deserted by the other members, is well known. And how often have armies been fired to the most dangerous exploits, or recalled to their duty, when ready to mutiny, by a moving speech of their general!

The principal heads of argument proper for advice are those taken from the nature of the thing under consideration. 1. *Pleasure* often affords a very cogent argument in discourses of this nature. 2. *Profit* or advantage has no less influence upon mankind than the former; and, when it respects things truly valuable, it is a very just and laudable motive. 3. *Honor*, than which no argument will sooner prevail with generous minds, or inspire them with greater ardor.

But although a thing, considered in itself, appear beneficial if it could be attained, yet the expediency of undertaking it may still be questionable; in which case the following heads, taken from the circumstances which attend it, will afford proper arguments to engage in it:— 1. The *possibility* of succeeding may sometimes be argued as one motive to this end. 2. But an argument founded upon *probability* will be much more likely to prevail. 3. But as even probability is not a motive strong enough with many persons to engage in the prosecution of a thing which is attended with considerable difficulties, it is often necessary to represent the *facility* of doing it, as an additional reason. 4. If the thing advised can be shown to be in any respect *necessary*, this will render the motive still much stronger for undertaking it. 5. To these heads may be added the consideration of the *event*, which in some cases carries great weight with it. As when we advise to the doing of a thing from this motive, That whether it succeed or not, it will yet be of service to undertake it.

These are the principal heads which furnish the orator with proper arguments in giving advice. But no small skill and address are required in giving it. For since the tempers and sentiments of mankind, as well as their circumstances, are very various, it is often necessary to accommodate the discourse to their opinions and prejudices. And therefore the weightiest arguments are not always the most proper and fittest to be used on all occasions. Cicero, in treating upon this subject, distinguishes mankind into two sorts; the ignorant, who always prefer profit to honor; and such as are civilized, who prefer honor and reputation.

IV. *Of arguments suited to judicial discourses.*—In judicial controversies there are two parties; the plaintiff or prosecutor, and the defendant or person charged. The subject is always something past, and the ends proposed by them Cicero calls equity or right; the former of which arises from the laws of the country, and the latter from reason and the nature of things.

All judicial causes are either private or public. Private causes, or civil causes, relate to the right of particular persons. Public causes are those which relate to public justice and the government of the state; which are also called

criminal, because by them crimes are prosecuted, whether capital, or of a less heinous nature. We need only take the heads of the arguments from this last kind, because they are more copious, and easy to be illustrated; whence such as agree to the former will sufficiently appear. 1. The *conjectural* state. When the accused person denies the fact, there are three things which the prosecutor has to consider: whether he would have done it, whether he could, and whether he did it. And hence arise three topics; from the will, the power, and the signs or circumstances which attended the action. The affections of the mind discover the will; as passion, an old grudge, a desire of revenge, a resentment of an injury, and the like. The second head is the power of doing a thing; and there are three things which relate to this, the place, the time, and opportunity. The third head comprehends the signs and circumstances which either preceded, accompanied, or followed, the commission of the fact. So threats, or the accused person being seen at or near the place before the fact was committed, are circumstances that may probably precede murder; fighting, crying out, bloodshed, are such as accompany it; paleness, trembling, inconsistent answers, hesitation, or faltering of the speech, something found upon the person accused which belonged to the deceased, are such as follow it. These are the topics from which the prosecutor takes his arguments. The business of the defendant is to invalidate these. Therefore such as are brought from the will, he either endeavours to show are not true, or so weak as to merit very little regard. And he refutes those taken from the power, by proving that he wanted either opportunity or ability; as, if he can show, that neither the place nor time insisted on was at all proper; or that he was then in another place. In like manner he will endeavour to confute the circumstances, if they cannot be directly denied, by showing that they are not such as necessarily accompany the fact, but might have proceeded from other causes, though nothing of what is alleged had been committed; and it will be of great service to assign some other probable cause.

2. The *definitive* state, which is principally concerned in defining and fixing the name proper to the fact; though orators seldom use exact definitions, but commonly choose larger descriptions, taken from various properties of the subject or thing described. The heads of argument in this state are much the same to both parties. For each of them defines the fact his own way, and endeavours to refute the other's definition.

3. The third state is that of quality, in which the dispute turns upon the justice of an action. And here the defendant does not deny he did the thing he is charged with; but asserts it to be right and equitable, from the circumstances of the case, and the motives which induced him to it.

4. Lastly, a fact is sometimes rather excused than defended, by pleading that it was not done designedly, or with any ill intent. This is called *concession*; and consists of two parts, apology

and intreaty. The former represents the matter as the effect of inadvertency, chance, or necessity.

V. *Of the character and address of an orator.*

—Having considered and explained the first part of invention, which furnishes the orator with such arguments as are necessary for the proof of his subject, we are next to show what are the proper means to conciliate the minds of his hearers, to gain their affection, and to recommend both himself and what he says to their good opinion and esteem. This is by Quintilian called propriety of manners. And he adds, it is necessary 'that every thing appear easy and natural, and the disposition of the speaker be discovered by his words.' There are four qualities said to be suited to the character of an orator, which should appear in his discourses, to render what he says acceptable to his hearers; and these are, wisdom, integrity, benevolence, and modesty. It is the orator's business to consider the various characters and circumstances of life, with the different bias and way of thinking they give to the mind; that he may so conduct himself in his behaviour and manner of speaking as will render him most acceptable, and gain him the good esteem of those whom he addresses.

VI. *Of the passions.*—As it is often highly necessary for the orator, so it requires his greatest skill, to engage the passions in his interest. Where persons will neither be convinced by reason, nor moved by the authority of the speaker, the only way left to put them upon action is to engage their passions. The passions may be separately referred, either to demonstrative, deliberative, or judicial discourses; though they are not confined to any of them. 1. To the demonstrative kind we may refer joy and sorrow, love and hatred, emulation and contempt. 2. To deliberative discourses may be referred fear, hope, and shame. 3. To judicial discourses may be referred anger and lenity, pity and indignation.

These are the passions with which an orator is principally concerned. In addressing which, not only the greatest warmth and force of expression is often necessary, but he must likewise first endeavour to impress his own mind with the same passion he would excite in others. A man may convince, and even persuade others to act, by mere reason and argument. But that degree of eloquence which gains the admiration of mankind, and properly denominates one an orator, is never found without warmth or passion. Passion, when in such a degree as to rouse and kindle the mind, without throwing it out of the possession of itself, is universally found to exalt all the human powers. It renders the mind more enlightened, penetrating, vigorous, and masterly, than it is in its calm moments. A man actuated by a strong passion becomes much greater than he is at other times. He is at no loss for words and arguments. He transmits to others, by a sort of contagious sympathy, the warm sentiments which he feels; his looks and gestures are all persuasive; and nature here shows herself infinitely more powerful than art.

PART II.

OF DISPOSITION.

As invention supplies the orator with necessary materials, so disposition directs him how to place them in the most proper order. What is here chiefly intended by it is, the placing the several parts of a discourse in a just method and dependence upon one another. Writers are not all agreed in determining the parts of an oration: though the difference is rather in the manner of considering them than in the things themselves. Cicero mentions six, viz. introduction, narration, proposition, confirmation, confutation, and conclusion.

I. *Of the introduction.*—The design of the introduction is to prepare the minds of the hearers for a suitable reception of what is to follow. For this end, three things are requisite; that the orator gain the good opinion of his hearers, that he secure their attention, and give them some general notion of his subject. As to attention, Cicero says, 'We shall be heard attentively on one of these three things; if we propose what is great, necessary, or for the interest of those to whom the discourse is addressed. Some general account of the subject of the discourse is always necessary. For every one expects to be soon informed of the design of the speaker, and what he proposes to treat of. These are the heads which commonly furnish matter for this part of a discourse. In some cases, orators have recourse to a more artful way of opening their subject, endeavouring to remove jealousies, apologise for what they are about to say, and seem to refer it to the candor of the hearers to judge of it as they please. This is called insinuation; and may be necessary, where a cause is in itself doubtful, or may be thought so from the prejudices of the hearers, or the impressions already made upon them by the contrary side. An honest man would not knowingly engage in a bad cause; and yet, through prevailing prejudice, that may be so esteemed which is not so in itself. In these cases great prudence is necessary to give such a turn to things as may be least liable to offence.'

II. *Of narration.*—The orator having prepared his hearers to receive his discourse with candor, and acquainted them with his general design, before he proceeds directly to his subject, often finds it necessary to give some account of what preceded, accompanied, or followed upon it. And this he does to enlarge the view of the particular point in dispute, and place it in a clearer light. This is called narration; which is a recital of something done, in the order and manner in which it was done. Those things which properly enter into a narration are the cause, manner, time, place, and consequences of an action; with the temper, fortune, views, ability, associates, and other circumstances of those concerned in it. In relating a fact, the orator describes it in so strong and lively a manner as may give the greatest evidence to his hearers, and make the deepest impression upon their minds. There are four properties required in a good narration; that it be short, perspicuous, probable, and interesting.

III. *Of the proposition.*—In every regular discourse, the speaker's intention is to prove or illustrate something. And, when he lays down his subject in a distinct and express manner, this is called the proposition. Orators use several ways in laying down the subject of their discourses. Sometimes they do it in one general proposition. At other times, to give a clearer and more distinct view of their discourse, they subjoin to the proposition the general heads of argument by which they endeavour to support it. But when the subject relates to several different things, which require to be separately laid down in distinct propositions, it is called a partition. Some have made two kinds of partition, one called separation, and the other enumeration. By the former, the orator shows in what he agrees with his adversary, and wherein he differs from him. By the latter he acquaints his hearers with the several parts of his discourse upon which he designs to treat. And this alone, properly speaking, is a partition. There are three things requisite in a good partition; that it be short, complete, and consist but of a few members. A just partition is attended with considerable advantages. It gives both light and ornament to a discourse. In a sermon, or a pleading at the bar, few things are of greater consequence than a proper division. It should be studied with much care; for, if one take a wrong method at first setting out, it will lead him astray in all that follows, and render the whole discourse either perplexed or languid.

IV. *Of confirmation.*—The orator, having acquainted his hearers, in the proposition, with the subject on which he designs to discourse, usually proceeds either to prove or illustrate what he has laid down. Some discourses require nothing more than an illustration, to set them in a proper light, for which reason, they have often no distinct proposition. But, where arguments are brought in defence of the subject, this is properly confirmation. Cicero defines 'confirmation, that which gives proof, authority, and support, to a cause, by reasoning.' If any thing in the proposition seems obscure, or liable to be misunderstood, the orator first explains it, and then offers such arguments in proof of it, and represents them in such a light, as seem most proper to gain the assent of his hearers. Two methods of reasoning are employed by orators, the synthetic and analytic.

1. Every piece of synthetic reasoning may be resolved into a syllogism or series of syllogisms. As a logical syllogism consists of three parts or propositions, a rhetorical syllogism frequently contains four or five. Cicero reckons this last the most complete. But all that is said in confirmation of either of the premises is accounted but as one part. But orators do not often use complete syllogisms, but most commonly enthymemes. An enthymeme is an imperfect syllogism, consisting of two parts; the conclusion, and one of the premises: and, in this kind of syllogism, that proposition is omitted, whether it be the major or minor, which is sufficiently manifest of itself, and may easily be supplied by the hearers. But the proposition that is expressed is usually called the antecedent, and

the conclusion of the consequent. It is reckoned a beauty in enthymemes when they consist of contrary parts: because the turn of them is most acute and pungent. Such is that of *Micipsa* in *Sallust*: 'What stranger will be faithful to you who are an enemy to your friends?' Orators manage enthymemes in the same manner they do syllogisms; that is, they invert the order of the parts, and confirm the proposition by one or more reasons: and therefore a rhetorical enthymeme frequently consists of three parts, as a syllogism does of five. Though, strictly speaking, a syllogism can consist of no more than three parts, and an enthymeme but of two.

2. The other method of reasoning is the analytic, in which the orator conceals his intention concerning the point he is to prove, till he has gradually brought his hearers to the designed conclusion. They are led on, step by step, from one known truth to another, till the conclusion be stolen upon them, as the natural consequence of a chain of propositions. Under the analytic may be comprehended reasoning by example. Rhetoricians use this word in a different sense from the common acceptation. In oratory the word example is used for any kind of similitude; or, as *Vossius* defines it, 'when one thing is inferred from another, by reason of the likeness which appears between them.' Hence it is called an imperfect induction, which infers something from several others of the like nature, and has always the greatest force when the examples are taken from facts. But comparisons are sometimes made between facts and other things, to infer some difference or opposition between them. In comparing two facts, on account of some disagreement and unlikeness, the inference is made from the difference between one and the other in that particular respect only. Thus we have given a brief account of the principal methods of reasoning used by orators. As to the disposition of arguments, or the order of placing them, some advise to put the weaker, which cannot wholly be omitted, in the middle: and such as are stronger partly in the beginning, to gain the esteem of the hearers, and render them more attentive; and partly at the end, because what is last heard is likely to be retained longest: but, if there are but two arguments, to place the stronger first, and then the weaker; and after that to return to the former, and insist principally upon it. But this must be left to the prudence of the speaker. Nor ought arguments to be crowded too closely upon one another; for that takes off from their force, and does not leave the hearers sufficient time duly to consider them.

V. *Of confutation.*—The forms of reasoning here are the same as have been explained under confirmation. Confutation, however, is often the more difficult task; because he who is to prove a thing comes usually prepared; but he who is to confute it is frequently left to a sudden answer. Therefore, not only a good judgment, but a readiness of thought is necessary. Those arguments that are foreign to the subject may in a very few words be shown to be insignificant. There ought also to be a distinction made between such things as relate to the

subject, according to their importance. Those that appear to have no great weight should be slightly remarked; and are generally better turned off with an air of neglect, a pungent question, or an agreeable jest, than confuted by a serious and labored answer. But those which relate to the merits of the cause may be confuted either by contradicting them, or by shewing some mistake in the reasoning, or their invalidity when granted.

Things may be contradicted several ways. What is apparently false may be expressly denied. And what the adversary cannot prove may likewise be denied. It is a handsome way of contradicting a thing, by showing that the adversary himself maintained the contrary. An adversary is never more effectually silenced than when he is charged with contradictions; for this is stabbing him with his own weapon. Sometimes a thing is not in express terms denied, but represented to be utterly incredible. And this method exposes the adversary more than a bare denial. There is likewise an ironical way of contradicting a thing, by retorting that and other things of the like nature upon the adverse party. Such an unexpected return is sometimes of great service to abate the confidence of an adversary.

A second method of confutation is, by observing some flaw in the reasoning of the adverse party. Syllogisms may be refuted, either by showing some mistake in the premises, or that the conclusion is not justly deduced from them. Enthymemes may be refuted, either by showing that the antecedent is false, or the consequent not justly inferred from it. As to induction and example, by which the truth or equity of a thing is proved from its likeness to other things, the reasoning is invalid if the things so compared can be shown not to have that similitude or agreement on which the inference is founded. The last method of confutation is when the orator does in some sense grant the adversary his argument, and at the same time shows its invalidity. This is done by a variety of ways, according to the nature of the subject. Sometimes he allows what was said may be true; but pleads that what he contends for is necessary. At other times he pleads that, although the contrary opinion may seem to be attended with advantage, yet that his own is more just or honorable. Such was the case of *Regulus*. Another way of confutation is by retorting upon the adversary his own argument. The orator takes this advantage where an argument proves too much, that is, more than the person intended who made use of it. Inversion resembles this, by which the orator shows that the reasons offered by the opposite party make for him. Sometimes the charge is acknowledged, but the crime shifted off to another. Another method is to alleviate the charge, and take off the force or it, by showing that the thing was not done with that intention which the adversary insinuates. Such are the methods of confutation used by orators, in answering arguments brought by the contrary party. But sometimes they raise such objections themselves to what they have said as they imagine may be made by others;

which they afterwards answer, the better to induce their hearers to think that nothing considerable can be offered against what they have advanced, but what will admit of an easy reply. This is an effectual way of defeating an adversary, when the objection is well stated, and clearly answered.

VI. *Of the conclusion.*—Rhetoricians make the conclusion of a discourse to consist of two parts: recapitulation, and an address to the passions.

1. Recapitulation is a summary account of what the speaker has before offered in maintenance of his subject; and is designed both to refresh the memory of the hearers, and to bring the principal arguments together into a narrow compass, that they may appear in a stronger light. There are several things necessary to a good recapitulation. (1.) It must be short and concise, as it is designed to refresh the memory, and not to burden it. The chief things only are to be touched, on which the cause principally depends; the general heads of the discourse, with the main arguments brought to support them. (2.) They should be recited in the same order in which they were at first laid down. The hearers will thus be enabled better to keep pace with the speaker as he goes along. Every thing ought to be represented in the strongest terms, and in so lively a manner as may at the same time both entertain the audience, and make the deepest impression upon their minds. Sometimes a repetition is made, by running a comparison between the speaker's own arguments and those of the adverse party. But when the discourse is very long, and the arguments insisted on have been many, to prevent the hearers losing patience by a more particular recital, the orator sometimes only just mentions such things as he thinks of least consequence by saying that he omits or passes over them, till he comes to what is of greater moment, which he represents more fully. And this is what the writers upon this art call *preterition*.

2. By an address to the passions, the orator sometimes endeavours occasionally to work upon his hearers in other parts of his discourse, but especially in the conclusion, where he is warmest himself, and labors to make them so. For the main design of the introduction is to conciliate the hearers; of the narration, proposition, and confirmation, to inform them; and of the conclusion, to move them. And, therefore, says Quintilian, 'here all the springs of eloquence are to be opened. It is here we secure the minds of the hearers, if what went before was well managed. Now we are past the rocks and shallows, all the sails may be hoisted.' And, as the greatest part of the conclusion consists in illustration, the most pompous language and strongest figures have place here. The passions, which the orator addresses, differ according to the nature of the discourse. In demonstrative orations, when laudatory,—love, admiration, and emulation, are usually excited; but, in invectives,—hatred, envy, and contempt. In deliberate subjects, either the hope of gratifying some desire is set in view, or the fear of some impending evil. And, in judicial discourses, almost

all the passions have place, but more especially resentment and pity. But the same passion may be excited by very different methods. Horace endeavours to recommend virtue by laughing vice out of countenance; Persius moves us to an abhorrence of vice, with the severity of a philosopher; and Juvenal by open and vehement invectives. So orators make use of all these methods, but they should not dwell long upon the same passion. When the emotion is once carried as high as it can be, the hearers should be left under its influence.

Orators sometimes endeavour to raise contrary passions, as they are concerned for opposite parties. So the accuser excites anger and resentment, but the defendant pity and compassion. But the orator should always express the same passion himself with which he endeavours to affect others, in his action, voice, language, words, and expression. But a decency and propriety of character is always to be observed. This justness of character is admirably well observed by Cicero, in his defence of Milo; who being a man of most undaunted courage, it would have been improper to introduce him moving pity, and begging for mercy. Cicero therefore takes this part upon himself; and what he could not do with any propriety in the character of Milo, he performs in his own. But, as persons are commonly more affected with what they see than with what they hear, orators sometimes call in the assistance of that sense in moving the passions. For this reason it was usual among the Romans, in judicial cases, for accused persons to appear with a dejected air and a sordid garb, attended by their parents, children, &c., with the like dress and aspect. The Areopagites at Athens, if the orator began to say any thing which was moving, an officer immediately bade him be silent. There is certainly a medium between these extremes.

VII. *Of digression, transition, and amplification.*—Besides the number, order, and nature of the parts which constitute a complete and regular oration, explained in the preceding chapters, there are several other things necessary to be known by an orator, which come under the second branch of his art. These are, digression, transition, and amplification.

1. *Digression*, as defined by Quintilian, is, 'a going off from the subject we are upon to some different thing, which may, however, be of service to it.' As where a subject is of itself dry, or requires close attention, it relieves the mind by something entertaining. But they should neither be too frequent nor too long. Indeed orators sometimes, when sore pressed, and the cause will not bear a close scrutiny, artfully run into digressions, to divert the attention of the hearers from the subject, and turn them to a different view. And in such cases, to be unobserved, they do it tacitly, that they may get clear of a difficulty, till they enter upon some fresh topic.

2. *Transitions* are often used not only after a digression, but upon other occasions, and recapitulate in a few words both what has been said already, and what is next designed to be said. Where a discourse consists of several

parts, this is very proper, especially when the parts are of a considerable length; for it assists the hearers to carry on the series of the discourse in their minds. But sometimes, in passing from one thing to another, a general hint may be thought sufficient; at other times, for greater brevity, the transition is imperfect, and mention made only of the following head.

3. *By amplification* is meant, not barely enlarging upon a thing, but the representation of it in the fullest and most comprehensive view, so that it may in the liveliest manner strike the mind. Rhetoricians have observed several ways of doing this. One is to ascend from a particular thing to a general. Thus Cicero in his defence of Archias, having commended him as a poet, says many things in praise of polite literature in general. A contrary method is, to descend from generals to particulars. As if any one, while speaking in commendation of eloquence, should illustrate what he says from the example of Cicero, and show the services he rendered his country, and the honors he gained to himself, by his admirable oratory. A third method is the enumeration of parts. Such representations greatly enlarge the image of a thing, and afford the mind a much clearer view of it than if it were contracted into one single proposition: and a thing may likewise be illustrated by its opposite. Thus the blessings and advantages of peace may be recommended from the miseries and calamities of war.

4. *Gradation* is another beautiful way of doing this. As when Cicero would aggravate the cruelty and barbarity of Verres for crucifying a Roman citizen, by showing it to be a punishment only inflicted upon slaves. Facts may be amplified from their circumstances; as time, place, manner, event, and the like. As the design of amplification is not barely to prove the truth of things, but to adorn and illustrate them, it requires a florid and beautiful style, strong and emphatic words, flowing periods, harmonious numbers, lively tropes, and bright figures.

PART III.

OF ELOCUTION.

On this subject we need only here observe, that it has been divided by rhetoricians into three parts: elegance, composition, and dignity. A discourse which has all these properties suitably adjusted, must, with respect to the language, be perfect in its kind.

I. *ELEGANCE* consists in purity and perspicuity; both with respect to single words and their construction in sentences.

1. *Purity* includes the choice of such words and phrases as are agreeable to the use of the language in which we speak: and so grammarians reduce the faults they oppose to it to two, *barbarism* and *solecism*; the former of which respects single words, and the latter their construction. But in oratory, neither all words, nor all expressions are called pure which occur in language; but such only as come recommended by the authority of those who speak or write with accuracy and politeness. Orators must also abstain from antiquated or obsolete

words and phrases, as well as vulgar or sordid ones; and the use of new terms, until they have been established, should also be carefully avoided.

2. *Perspicuity*, as well as purity, consists partly in single words, and partly in their construction.

i. As to single words those will be best understood which are used in their proper sense; and all words may be divided into proper words and tropes. Tropes are such words as are applied to some other thing than what they properly denote, by reason of some similitude, relation, or contrariety between the two things. So, when a subtle man is called a fox, the reason of the name is founded in a similitude of qualities. If we say, Cicero will always live, meaning his works, the cause is transferred to the effect. All words must at first have had one original and primary signification, which, strictly speaking, may be called their proper sense. But, through length of time, words lose their original signification, and assume a new one, which then also becomes their proper sense. For example, the word knave anciently signified a servant.

Sometimes two or more words have the same signification, and may therefore be used synonymously. Of this kind are the words pity and compassion. There are other words of so near an affinity to each other, that they are commonly thought synonymous. Such are mercy and pity; though mercy in its strict sense is exercised towards an offender, and pity respects one in distress. This peculiar force and distinction of words is carefully to be attended to. Though words, when taken in their proper signification, generally convey the plainest and clearest sense, yet some are more forcible, sonorous, or beautiful, than others. And by these considerations we must often be determined in our choice of them. So whether we say, he got, or he obtained, the victory, the sense is the same: but the latter is more full and sonorous. As to tropes, though generally speaking they are not to be chosen where perspicuity is only designed, and proper words may be found; yet, through the penury of all languages, the use of them is often necessary. And some, especially metaphors, which are taken from the similitude of things, may, when custom has rendered them familiar, be considered as proper words, and used in their stead. Thus, whether we say, I see your meaning, or I understand your meaning, the sense is equally clear, though the latter expression is proper, and the former metaphorical.

ii. But perspicuity arises not only from a choice of single words, but likewise from the construction of them in sentences. For the meaning of all the words in a sentence, considered by themselves, may be very plain and evident; and yet, by a disorderly construction, or confusion of the parts, the sense of the whole may be obscured.

Ambiguity of expression is one cause of obscurity. This sometimes arises from the different senses in which a word is capable of being taken. In all serious discourses ambiguities ought carefully to be avoided. But obscurity more frequently arises from the ambiguous construction

of words, which renders it difficult to determine in what sense they are to be taken. Quintilian gives us this example: 'A certain man ordered in his will, that his heir should erect for him a statue holding a spear made of gold.' A question arose here, of great consequence to the heir, from the ambiguity of the expression, whether the words made of gold were to be applied to the statue or the spear.

Obscurity is also occasioned either by too short and concise a manner of speaking, or by sentences too long and prolix: and parentheses, when either too long or too frequent, have the same effect.

II. OF COMPOSITION.—Composition, in the sense here used, gives rules for the structure of sentences, with the several members, words, and syllables of which they consist, in such a manner as may best contribute to the force, beauty, and evidence of the whole. It consists of four parts, which rhetoricians call period, order, juncture, and number. The first treats of the structure of sentences; the second of the parts of sentences, which are words and members; and the two last of the parts of words, which are letters and syllables. For all articulate sounds, and even the most minute parts of language, come under the cognizance of oratory.

1. *Of period*.—In every sentence or proposition something is said of something. That of which something is said logicians call the subject, and that which is said of it the predicate: but, in grammatical terms, the former is a noun substantive, and the latter a finite verb, denoting affirmation, and some state of being, acting, or suffering. A simple sentence consists of one such noun and verb, with whatever else is joined to either or both of them. And a compound sentence contains two or more of them; and may be divided into so many distinct propositions as there are such nouns and verbs, either expressed or understood. Some sentences consist, either wholly or in part, of such members as contain in them two or more compound ones, which may, therefore, for distinction's sake, be called *decompound members*. In the proper distinction and separation of the members, in such complex sentences, the art of pointing chiefly consists. For the principal use of a comma is to divide the simple members, a semicolon the compound ones, a colon such as are decompounded, and a period the whole, from the following sentence. See PUNCTUATION.

Sentences, with respect to their form or composition, are distinguished into two sorts, called by Cicero *tracta*, straight or direct; and *contorta*, bent or winding. By the former are meant those whose members follow each other in a direct order, without any inflection; and by the latter those which strictly speaking are called periods. For *περιόδος* in Greek signifies a circuit or circle: and so the Latins call it *circuitus* and *ambitus*: by which both mean a sentence consisting of correspondent parts, so framed that the voice in pronouncing them may have a proper elevation and cadency, and distinguish them by its inflection; and as the latter part returns back, and unites the former, the period, like a circle, surrounds and encloses the whole sense. This ele-

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vation of the voice, in the former part of the period, is by the Greeks called *παρασις* and by the Latins *propositio*; and the depression of it, in the latter part, by the one *αποδοσις*, and by the other *reductio*. As simple sentences have not these correspondent parts which require any inflection of the voice, nor a circular form, by reason of their brevity, they are not properly periods, in the strict sense of the word: though, in common speech, the words sentence and period are used as equivalent terms. As to those compound sentences whose members follow each other in a direct order, without any inflection, there is little art required in their composition. Since such sentences, therefore, may be limited at pleasure, it seems more convenient both for the speaker and hearers to confine them to a moderate length.

But the principal art relating to this part of composition lies in the frame and structure of such compound sentences as are properly called periods. In the formation of these, two things are chiefly to be regarded; their length and cadency. As the length ought to be suited to the breath of the speaker, the ancient rhetoricians scarcely admit of more than four colons; by which we may understand compound members of a moderate size, which will be generally found a suitable and proportionate length. As to the cadency, Cicero has observed that the ears judge what is full and what is deficient; and direct us to fill up our periods, that nothing be wanting of what they expect. When the voice is raised at the beginning of a sentence, they are in suspense till it be finished; and are pleased with a full and just cadency, but are sensible of any defect, and displeased with redundancy. Therefore care must be taken that periods be neither deficient, and as it were maimed, so as to defraud the ears of what seemed to be promised them; nor, on the other hand, offend them by too long and immoderate excursions. This rise and cadency of the voice, in pronunciation, depend on the nature and situation of the members. By the word members is to be understood such as are uncompound. In a period of two members the turn of the voice begins with the latter member. If a sentence consist of three members, the inflection is best made at the end of the second; for, if it begin immediately after the first, the voice will be either apt to sink too low, and not to be heard, before it reach the end; or else be precipitated, to prevent it. But a period of four members is reckoned the most complete and perfect, where the inflection begins at the middle, that is with the third member. An equality of the members should also be attended to in the composition of a period, the better to adjust their rise and cadency. And for this reason, in sentences of three members, where the cadency begins with the third, or in those of four members, where it begins at the fourth, it promotes the harmony to make the last number longest. This is properly the nature of rhetorical periods, which, when rightly formed, have both beauty and dignity. But as all discourse is made up of distinct sentences, and whenever we express our thoughts it is in some of the forms above mentioned, so the use of them is not promiscuous, but suited to answer different

designs in speaking. And in this view they are considered and made use of by the orator. Examples of all these might be quoted from Cicero and other ancient orators; but it is unnecessary to swell this article with long quotations.

2. *Of order.*—Order is of two kinds, natural and artificial; and each of these may be considered with respect to the parts, either of simple or compound sentences. i. As to simple sentences, we call that order natural, when all the words in a sentence are so placed as they are connected with or follow each other in a grammatical construction. ii. Artificial order, as it respects simple sentences, has little or no regard to the natural construction of words; but disposes them in such a manner as will be most agreeable to the ear, and best answer the design of the speaker.

As to compound sentences, or such as consist of two or more members, either simple or compounded, what relates to the words in each member separately is the same as in simple sentences. But, with regard to the disposition of the several members, that is called the natural order which so places them as they mutually depend on each other. When this order is inverted, it is styled artificial. It is unnecessary to enlarge farther, or to adduce examples upon this subject, as it is discussed, and the beauties as well as defects of the analogous and transpositive languages pointed out under the article LANGUAGE.

But there are some other considerations relating to order, which, being taken from the nature of things, equally suit all languages. So, in amplifying, there should be a constant gradation from a less to a greater; as when Cicero says, ‘ambition creates hatred, shyness, discords, seditions, and wars.’ On the contrary, in extenuating, we should descend from a greater to a less; as if, speaking of the ancient laws of Rome, one should say, ‘they were so far from suffering a Roman citizen to be put to death, that they would not allow him to be whipt, or even to be bound. In constituting any whole, we put the parts first; as, ‘invention, disposition, elocution, and pronunciation, make up the art of oratory.’ But in separating any whole, the parts follow; as, ‘the art of oratory may be divided into these four parts; invention, disposition, elocution, and pronunciation.’ In every enumeration care must be taken not to mix the whole with the parts; but, if it be mentioned at all, it must either be put first or last. So it would be wrong to say ‘he was a man of the greatest prudence, virtue, justice, and modesty:’ for the word virtue here contains in it the other three, and therefore should not be inserted among them.

3. *Juncture and number* relate to letters and syllables; the former treating of their connexion, and the latter of their quantity.

Juncture respects the quality of syllables. A due attention is to be paid to the nature of the vowels, consonants, and syllables in the connexion of words, with regard to the sound. When a word ends with a vowel, and the next begins either with a different vowel, or the same repeated, it usually renders the pronunciation

hollow and unpleasant. Those which have the weakest and smallest sound follow best; because they occasion the least alteration of the organ in forming the two sounds. If a word end with a vowel, the next ought to begin with a consonant, or such a vowel whose sound may agree well with the former. But, if a word conclude with a consonant, either a vowel should follow, or such a consonant whose proper pronunciation will suit with it. And the same syllable ought not to be repeated at the end of one word, and the beginning of the next. This last, however, rarely happens in our language, which abounds with consonants.

4. *Number* respects the quantity of syllables. In the Greek and Roman languages every syllable has its distinct quantity; and is either long, short, or common: two or more of which joined together in a certain order make a foot, and a determinate number of these in a different order constitute their several sorts of verse. Though their prose was not so confined with regard to the feet, either as to the kind or place of them, as their metrical compositions, yet it had a sort of measure, more especially in the rise and cadency of their periods. This they called rhetorical number. But their rules are not applicable to our language, which has not that accurate distinction of quantity in its syllables. A great number of monosyllables do not sound well together. For as there ought to be a greater distance in the pronunciation between one word and another than between the syllables of the same word, such pauses, though short, yet, when too frequent, make the sound rough, and thus spoil its harmony. This is the more necessary to be attended to, because the English language abounds with monosyllables. On the contrary, a continuation of many long words makes a sentence move too slow and heavily. And, therefore, such periods generally run best which have a proper mixture of words of different lengths. Besides, as every word has its accent, which with us stands for quantity, a number, either of monosyllables or long words coming together, abates the harmony, as it lessens the variety. Several words of the same ending do not sound well together, especially where the accent falls upon the same syllable in each of them. For this creates too great a jingle by the similitude of sound; and displeases from an appearance of affectation. Of this kind is the following sentence: ‘Nothing is more welcome, delightful, or wholesome, than rest to a wearied man.’ In such expressions, if the order of the words cannot well be altered, some other word should be substituted in the room of one of them at least. But, if a sentence end with a monosyllable, it is apt to hurt the cadence, and disappoint the ear; whereas words of a moderate length carry a greater force with them by the fulness of their sound, and afford the ear what is expected. There is one sort of monosyllables, especially, which never sound well at the conclusion of a period, viz. the signs of cases; as when we say, ‘avarice is a crime which wise men are too often guilty of;’ instead of ‘avarice is a crime, of which wise men are too often guilty.’ Nor are very long words well suited either to the beginning or conclusion of a pe-

riod; for they retard the pronunciation at first, and fall too heavy at the end.

III. OF DIGNITY. Dignity chiefly consists in the right use of tropes and figures. It is not sufficient for an orator to express himself with propriety and clearness, or in smooth and harmonious periods; but his language should be suited to the nature and importance of the subject. And therefore, as elegance gives rules for the first of these, and composition for the second, so does dignity for the last. It is evident that different subjects require a different style and manner of expression; for, as Quintilian says, 'what is magnificent in one discourse would be turgid in another.' This variety in the manner of expression arises in a great measure from tropes and figures, which not only enliven and beautify a discourse, but give it likewise force and grandeur.

1. *Of tropes*.—A trope is a figure of words, and has been usually defined to be the change of a word from its proper signification to some other with advantage, either as to beauty or strength. But this definition is not strictly just; for, in every trope a reference is had to two things, which occasions two ideas; one of the thing expressed, and another of that to which it has a respect. For all tropes are taken, either from things internally or externally related; or from some similitude between them; or from a contrariety. The first of these is called synecdoche, the second metonymy, the third metaphor, and the last irony. The reasons which occasioned the introduction of tropes, as Quintilian observes, are three; necessity, emphasis, and beauty.

i. Tropes were first introduced from necessity, deriving their origin from the barrenness of language; because no language contains a sufficient number of proper words to express all the different conceptions of our minds: but the principal cause of their introduction seems to be that extensive influence which imagination possesses over every kind of speech. The mind considers the same thing various ways; views it in different lights; and compares it with other things. Hence it is furnished with an almost infinite number of ideas, which cannot all be expressed by proper words, since new ideas occur daily. And, were this possible, yet would it be impracticable; because the multitude of words must be so vastly great, that the memory could not retain them, nor recall them as occasion required. Tropes have remedied both these inconveniences. Thus, where a word is wanting to express any particular thing, it is clearly represented by the name of some other thing resembling it; the cause is signified by the effect, the subject by the adjunct, or the contrary, and the whole is often understood by a part, or a part by the whole. Thus, by the use of tropes, the mind is helped to conceive of something not expressed, from that which is expressed.

ii. A second use of tropes is emphasis. Tropes often express things with greater force than can be done by proper words. Sometimes a lively trope conveys a fuller and more just idea of a thing than a large periphrasis. Thus, when

Virgil calls the Scipios two thunderbolts of war, he gives a more lively image of the rapid force and speedy success of their arms than could have been conveyed by a long description in plain words. And in many cases the tropical use of words is so emphatical that in this respect it may be justly esteemed the most proper. So, incensed with anger, inflamed with desire, fallen into an error, are all metaphorical expressions, yet perhaps no proper words can be made use of which will convey a more lively image of the thing we design to represent by them.

iii. Beauty and ornament have been another cause of the use of tropes. Some subjects require a more florid and elegant dress than others. And it is the business of an orator to entertain his hearers while he instructs them. Cicero has observed, that 'as garments were first invented from necessity, to secure us from the injuries of the weather, but improved afterwards for ornament and distinction; so the poverty of language first introduced tropes, which were afterwards increased for delight.' As a moderate use of tropes, justly applied, beautifies and enlivens a discourse, so an excess of them causes obscurity, by running it into abstruse allegories and riddles. Tropes are not the ordinary dress of our thoughts, but a foreign habit; and therefore he who fills his discourse with a continued series of them, acts like one who appears in public in a strange dress. Care should also be taken not to transfer tropes from one language into another.

Primary tropes are subdivided into four species: 1. Metaphor; 2. Metonymy; 3. Synecdoche; 4. Irony.

1. A *metaphor* is usually defined, a trope, which changes words from their proper signification to another different from it, by reason of some similitude between them. But it is certain that a word, when used metaphorically, does not alter its signification, but retains its proper sense. Cicero calls a metaphor a similitude reduced to a single word. It is a similitude, when I say of a man, he has acted like a lion; and a metaphor, when I say, he is a lion. Metaphors are derived from every part of nature. 1. From similitudes between animate, and from similitudes between inanimate beings. 2. From similitudes between inanimate things and animals: and 3. Those are esteemed the finest and strongest which ascribe life and action to inanimate things. All forced and harsh metaphors should be avoided, nor should they be too numerous; in a word, they ought not to be used, but either where a proper word is wanting, or where they are more significant or beautiful than the proper word. See METAPHOR.

2. *Metonymy*, as defined by Quintilian, is the putting one word for another. But Vossius describes it more fully, when he calls it, 'a trope which changes the names of things that are naturally united, but in such a manner as that one is not the essence of the other.' A word used as a metonymy changes its sense, and denotes something different from its proper signification. Thus, when Mars is put for war, and Ceres for corn, they lose their personal sense, and stand for the effects of which those deities were said to be the cause. A metonymy is not so exten-

sive as a metaphor, nor altogether so necessary; because nothing is said by a metonymy which cannot be expressed in proper words; whereas metaphors are often used for want of proper words to express some ideas. However, metonymies enrich a discourse with an agreeable variety, and give both force and beauty to an expression. And some metonymies, in common discourse, are more frequently made use of than the proper words in whose room they are put. So, it is more usual to say, this is such a person's hand, or I know his hand, than his writing, when we intend this last sense of the word. Metonymies commonly receive their names from the cause and effect, the subject and the adjunct.

i. A metonymy of the cause is when the external cause is put for the effect; as tongue for language, sword for slaughter, &c.

ii. The second kind of metonymy puts the effect for the efficient cause, whether the agent, or only the means and instrument. So Virgil calls the two Scipios the destruction of Libya, because they were the agents who effected it.

iii. The third kind of metonymy is when the subject is put for the adjunct. Thus the seat of any faculty or affection is used for the faculty or affection itself. So it is usual to say, a man of a clear head, when we mean a clear mind; or of a warm heart, when we mean kind affections. Thus also the time is put for the persons living in it; as the degeneracy of the present age, the virtue of former times. The popish doctrine of transubstantiation is founded upon an abuse of this trope. For when our Saviour, speaking of the bread and wine then before him, says, 'this is my body, and this is my blood,' his plain meaning is they were the signs of his body and blood, the thing signified being put for the sign by this sort of metonymy. In like manner, our Saviour, in a metaphorical sense, calls himself a vine, and a door, expressions which even the Catholics themselves do not interpret literally.

iv. The fourth kind of metonymy is that wherein the adjunct is put for the subject. As when Virgil says, 'they lie down upon purple;' that is, upon couches died with purple. By this trope virtues and vices are put for the persons in whom they are found. As in that beautiful passage of Cicero, where, comparing the profligate army of Catiline with the forces of the state, he says, 'on this side modesty is engaged, on that impudence; on this chastity, on that lewdness; on this integrity, on that deceit; on this piety, on that profaneness; on this constancy, on that fury; on this honor, on that baseness; on this moderation, on that unbridled passion; in a word, equity, temperance, fortitude, prudence, and all virtues, engage with injustice, luxury, cowardice, rashness, and all vices.' A third use of this trope is by putting a thing for the time in which it was done. Thus we say of a person, he has served so many campaigns, meaning so many summers. Lastly, the sign is put for the thing it signifies; as, the crown for the regal dignity, and the sword for the authority of the magistrate.

3. *Synecdoche* is a trope by which either the whole of a thing is put for a part of it, or a part for the whole; so that the things whose ideas are

presented to the mind in this trope are internally related to each other. In a *synecdoche* the word retains its proper sense, and the expression is elliptical.

i. One species of *synecdoche* puts the genus for the species. Thus, virtue in general is sometimes used to denote some particular virtue; as, when Cicero mentions virtue as one of the four qualifications necessary in a general, he means greatness of mind.

ii. The second kind of *synecdoche* puts the species for the genus. Thus bread denotes any kind of food: as when a person is said to get his bread by his labor; and money is put for any kind of wealth.

iii. The third species is, when the essential whole is put for one of its parts; that is, either for the matter or form. Thus, it is usual to say of a deceased person, he was buried at such a time. And, in the inscriptions of sepulchral monuments, here lies such a one, that is, his corpse.

iv. The fourth kind of *synecdoche* is when either the matter or form is put for the whole being. Thus silver and gold are used to signify money made of those metals. And soul is put for the whole person. This way of speaking occurs nowhere more frequently than in the sacred writings. But sometimes only part of the matter stands to express the whole essence or being; thus, so many head of cattle means entire cattle.

v. By the fifth species of *synecdoche* the whole of any material thing or quantity, whether continued or discrete, is put for a part of it. So when Cicero says, a war is kindled through the whole world, he calls the Roman empire the world. The same figure is used by St. Luke, ch. ii. ver. i.

vi. The sixth and last kind of *synecdoche* puts a part of any material thing or quantity for the whole of it. So we say of a fleet, that it consists of so many sail; meaning so many ships. And by this trope, that is ascribed to a single person which was done by the assistance of others, and in conjunction with them: as when it is said, that Lord Nelson defeated the French at Aboukir. To this kind of *synecdoche* may also be referred expressions in which the singular number is put for the plural; as, a man is liable to be misled by irregular passions; meaning mankind in general.

4. *Irony* is a trope in which one contrary is signified by another: as if any one should say, well done; when his design is to intimate that the thing was ill done. Not that the word is changed from its usual signification; but, by the circumstances attending the expression, we perceive the contrary to what is spoken is intended. Quintilian observes, that an irony may be known by one of these three ways: 'By the manner of pronunciation, or from the nature of the person or the thing. For, where any of these do not suit with the words, it is plain the speaker intends the contrary.' The proper subjects of irony are vices and follies of all kinds; and this way of exposing them is often more effectual than serious reasoning. Socrates used it so much that he got the name of *εἰρωνεύειν*, that is, the droll.

II. *Secondary tropes* are so called, because:

they are all of the same nature with the former, and may be referred to some one or other of them, though they have received different names. They are eight in number; antonomasia, communication, litotes, euphemism, catachresis, hyperbole, metalepsis, and allegory. The three first are simple tropes, and may all be referred to synecdoche. But the five last are of a mixed or complex nature, and not confined to any one of the primary tropes.

1. *Antonomasia*.—A common or general word is sometimes used for the proper name of some particular thing or person, who upon any account is eminent and remarkable. So we say, he is gone to, or he came from the city, that is, London. By the Scriptures we mean the Bible. The orator is used for Cicero, the poet for Homer or Virgil, the philosopher for Aristotle; and the apostle for St. Paul. On the contrary, the proper names of things or persons are sometimes applied to any other of the same character. Thus we use the word gospel for any certain and undoubted truth. And punie faith proverbially stood for falsehood among the Romans.

2. *Communication*, among orators, signifies a change of persons. Sometimes, to prevent the imputation of pride, in assuming to themselves the praise of any laudable action, they ascribe it to their hearers, and do not say we, but ye, did so and so. At other times, when it is necessary to remind them of something they have done amiss, or to caution them against some wrong step, they take it upon themselves, or join themselves with them, and do not say, you have done this, or do not do this; but we have done it, or let us not do it. At other times, in compliment to their hearers, they join them as partners in the commendable actions or virtues of other persons. Such tropes often occur both in Demosthenes and Cicero.

3. But there is a mode of speech in which, by denying the contrary, more is intended than the words express. This is called litotes; and is often used where a person is led to say any thing in his own praise, or to soften an expression which in direct terms might give offence. As if one should say, I do not commend you for that; meaning, I greatly discommend or blame you for it.

4. When any displeasing or ungrateful thing is expressed by a more soft and agreeable word, it is called *euphemism*. As death carries in it a disagreeable idea, instead of saying a person is dead, we often say he is departed. But when St. Luke, speaking of Stephen, who was stoned to death, says he fell asleep; this is a beautiful metaphor.

5. *Catachresis* signifies in general any harsh trope, though it is most commonly found in metaphors. It is principally used by poets, to enforce an expression, where the proper word does not seem strong enough. As when Milton, in describing the angel Raphael's descent from heaven, says, he sails between worlds and worlds.

6. *Hyperbole* is the boldest of all tropes: for it exceeds the strict bounds of truth, and purposely represents things either greater or less, better or worse, than they really are. But the representation is made in such a manner as not to im-

pose on the hearers. The excess in this trope is called *auxesis*; as when we say of any thing that is very high, it reaches to the skies. The defect, or contrary extreme, is termed *meiosis*; so we say of a very lean person, he is nothing but skin and bones, or a mere skeleton. Those hyperboles which are expressed comparatively are commonly most emphatical. To say a thing is as light as a feather, carries the idea very far; but to say it is lighter, heightens it greatly.

7. Sometimes two or more tropes, and those of a different kind, are contained under one word; so that several gradations, or intervening senses, come between the word that is expressed and the thing designed by it. And this is called a *metalepsis*. The contests between Sylla and Marius proved very fatal to the Roman state. Julius Cæsar was then a young man. But Sylla, observing his aspiring genius, said of him, 'in this young man there are many Mariuses.' In this expression there is a *metalepsis*, containing a synecdoche, an antonomasia, and a metonymy. So that Sylla's meaning, divested of these tropes, was, that Cæsar would prove a most dangerous person to the Roman republic; which afterwards proved true.

8. *Allegory* is a continuation of several tropes in one or more sentences. Thus Cicero says, 'fortune provided you no field, in which your virtue could run and display itself;' where the words field and run are metaphors taken from corporeal things, and applied to the mind. But in allegories, care should be taken that the same kind of trope be carried through the whole, so as to compose one uniform and consistent set of ideas. It is likewise necessary that the allusions be all evident. These are called pure allegories. See ALLEGORY.

II. *Of figures*.—This term seems to have been borrowed from the stage, where the different habits and gestures of the actors, suitable to the several characters they sustained, were by the Greeks called *εὑρημα*, and by the Latins figure; and it is usual to say of a person, both with respect to his dress and action, that he makes a very bad, or a very graceful figure. As language is the dress of our thoughts, in which they appear to others; so any particular manner of speaking may be called its figure. But rhetoricians restrain the sense of the word to such forms of speech as differ from the ordinary ways of expression; as the theatrical habits of actors on the stage differ from their usual garb at other times. A figure, therefore, in the sense used by rhetoricians, is a mode of speaking different from, and more beautiful and emphatical than, the usual way of expressing the same sense.

Figures seem to have been among the last ornaments introduced into the art of oratory. Aristotle, who treats so accurately upon other parts, says very little of this. But the Greek writers who came after him have supplied that deficiency. They took notice of the several modes of expression, observed their force and beauty, and gave them distinctive names. And indeed they have treated the matter with such minuteness that Quintilian thinks they have multiplied figures to excess. The author of Homer's life, which some ascribe to Plutarch, has shown that

there is scarcely a figure mentioned by rhetoricians but is to be met with in that most ancient poet. And, from the nature of speech, we may easily perceive that mankind must have very early introduced tropes to supply the want of proper words to express their simple ideas; and the like necessity must have put them upon the use of figures to represent their passions. When the mind is disturbed, we show it by our words as well as by our countenances and actions. Hence some have styled figures the language of the passions. And Cicero calls them 'the principal weapons of an orator.' His oration against Catiline, when he had just discovered his plot to destroy the Roman state and burn the city, affords a grand specimen of the strongest and most moving figures. And the discourse had its desired effect; for, when Catiline stood up to make his defence, the whole senate were so inflamed by what Cicero had said, that they had not patience to hear him speak; upon which he immediately left the city. Of a different description, but equally excellent, are those of Virgil, when Dido finds that Æneas is about to leave her, and using all her arts to detain him, she discovers her fear, anger, and revenge, with the whole crowd of passions which possessed her mind.

Figures should always be accommodated to the sentiments, and rise in proportion to the images, designed to be conveyed by them: but where the language outstrips the thought, though it may please the ear, yet an intelligent hearer will soon feel the impropriety. In the use of pathetic figures, it is generally better to be nervous than copious, that the images, by their closer union, may impress the mind with greater energy. All figures should be so interwoven in a discourse as not to render the style rough and uneven, sometimes high, and at other times low. In a word, they should rather seem to arise from nature than art.

Figures are divided into figures of words, and figures of sentences. The difference consists in this; that in the former, if we alter the words, or even the situation of them, we destroy the figure; but in the latter the figure remains, whatever words are used, or in whatever manner the order of them is changed. Thus, when the name of a person or thing is repeated, to intimate some known property or quality thereof, it is a verbal figure called *place*. Cicero was a true patriot; and therefore we say that at the time of Catiline's conspiracy, Cicero appeared like Cicero. The sense would remain the same, but the figure would be lost, if we should say, at that time Cicero appeared like himself. So when two or more sentences, or members of a sentence, end with the same word, it is called *epistrophe*; as when we say, to lose all relish of life is in effect to lose life. But if the order of the words be changed in the latter clause, thus, to lose all relish of life, is to lose life in effect; the figure vanishes. Such is the nature of the verbal figures. But it is not so in figures of sentences; they continue the same, whatever alterations are made in the words.

I. *Verbal figures* may be distinguished into three sorts, as they consist in a deficiency, a redundancy, or a repetition, of words.

Of the first sort are *ellipsis* and *asindeton*. 1. *Ellipsis* is when one or more words are wanting in a sentence, to complete the construction, and fully express the sense. This figure is often used in proverbial expressions: as when we say, Many men, many minds; i. e. have many minds; and, the more danger, the more honor; i. e. gains more honor. But where more is intended by such expressions than mere brevity, and especially when they are the effect of some passion, the figure is called *aposiopesis*. 2. *Asyndeton* is when the particles that connect the members of a sentence are left out, to represent either the celerity of an action, or the haste and eagerness of the speaker. Thus Cæsar expresses his speedy conquest of Pharnaces: I came, I saw, I conquered. If he had inserted the copulatives, and said, I came, and I saw, and I conquered, it would have retarded the communication of his ideas, and not given so just an idea of the swiftness of the action. We took notice, in a preceding section, of the vehement and impetuous manner in which Cicero attacked Catiline in his first oration, where his design was to fire the minds of the senate against him, and oblige him to leave the city. The next day, when Catiline was gone, he calls together the citizens, and in a sort of rapture thus begins, he is gone, departed, escaped, broke out; intimating both the excessive rage in which Catiline left Rome, and the great pleasure with which he was himself affected on that account. This concise way of speaking adds likewise a great emphasis to an expression, and affects the mind with great force.

ii. The second sort of verbal figures is contrary to these, and consists in a redundancy or multiplicity of words; which are likewise two, *pleonasmus* and *polysyndeton*. 1. When we use more words than are necessary to express a thing it is called *pleonasmus*. This is done sometimes for greater emphasis, as when we say, Where in the world is he? At other times it is designed to ascertain the truth of what is said: so the servant in Terence, when the truth of what he had related was called in question, replies, It is certainly so; I saw it with these eyes. 2. When the several parts of a sentence are united by proper particles it is called *polysyndeton*. This adds a weight and gravity to an expression, and, by retarding the course of the sentence, gives the mind time to reflect upon every part distinctly. We often meet with this figure in Demosthenes. Thus he encourages the Athenians to prosecute the war against Philip II. from this consideration, that now 'they had ships, and men, and money, and stores, and all other things which might contribute to the strength of the city, in greater number and plenty than in former times.' Every article here has its weight; but, if we remove the copulatives, the sentence will lose much of its force.

iii. The third kind of verbal figures consists in a repetition. Either the same word in sound or sense, is repeated; or one of a like sound or signification, or both. Of the former sort there are ten, called *antanaclasis*, *place*, *epizeuxis*, *climax*, *anaphora*, *epistrophe*, *symploce*, *epanalepsis*, *anadiplosis*, and *epanodos*. The two first of these agree in sound, but differ in sense; the eight following agree in both.

1. When the same word in sound, but not in sense, is repeated, it is called *antanaclasis*. This figure sometimes carries a poignancy in it; and, when it appears natural and easy, discovers a ready turn of thought. As when a son, to clear himself of suspicion, assured his father, He did not wait for his death; his father replied, But I desire you would wait for it. Here the word wait is taken in two different senses. And our Saviour uses this figure, when he says to one of his disciples, who desired to go and bury his father, Follow me, and let the dead bury their dead. Where dead in the one place denotes a natural death, and in the other a moral or spiritual death.

2. Sometimes the name of some person or thing is repeated, to denote some particular character or property; and then it is called *plocé*. Thus Cicero says, Young Cato wants experience, but yet he is Cato; meaning he had the steady temper of the family.

3. When a word is repeated with vehemence in the same sense, it is called *episeuris*. This figure shows the earnestness of the speaker, and his great anxiety about what he says; and therefore has a natural tendency to excite attention. It is suited to express anger, surprise, sorrow, and several other passions. As when Cicero would express his indignation against Anthony, for having been the chief instrument in bringing on the civil war, he says to him: You, you Anthony, pushed Cæsar upon the civil war. Or when our Saviour would express his great concern for the wickedness of the Jews, he exclaims, O Jerusalem, Jerusalem, who killest the prophets!

4. *Climax* is a beautiful kind of repetition, when the word, which ends the first member of a period begins the second, and so through each member, till the whole is finished. There is a great deal of strength as well as beauty in this figure, where the several steps rise naturally, and are closely connected. As in this example:—There is no enjoyment of property without government, no government without a magistrate, no magistrate without obedience, and no obedience where every one acts as he pleases. But, as Quintilian observes, this figure is apt to look too much like art; for which reason he advises not to use it often.

5. When several sentences, or members of a sentence, begin with the same word, it is called *anaphora*. This is a lively and elegant figure, and serves very much to engage attention: for, by the frequent return of the same word, the mind of the hearer is held in an agreeable suspense, till the whole is finished. ‘You do nothing,’ says Cicero to Catiline, ‘you attempt nothing, you think nothing, but what I not only hear, but also see and plainly perceive.’ It is frequently used by way of question; which renders it not only beautiful, but strong and nervous. As at the beginning of the same speech: ‘Does neither the night-guard of the palace, nor the city-watch, nor the people’s fear, nor the agreement of all good men, nor the meeting of the senate in this fortified place, nor the countenances and looks of this society, at all move you?’

6. *Epistrophe* is contrary to the former, and makes the repetition at the end of each member

or sentence. As thus:—Since concord was lost, friendship was lost, fidelity was lost, liberty was lost; all was lost.

7. *Symploce* takes in both these last figures. As in that of Cicero:—‘You would pardon and acquit him whom the senate have condemned, whom the people of Rome have condemned, whom all mankind have condemned.’ Here the several members both begin and end with the same word.

8. When a sentence concludes with the word with which it began, it is called *epanalepsis*. As in that expression of Plautus:—‘Virtue contains all things; he wants no good thing who has virtue.’ This figure adds force to an expression, when the principal thing designed to be conveyed is thus repeated, by leaving it last upon the mind. And it heightens the beauty, when the sentence has an agreeable turn arising from two opposite parts.

9. When the next sentence begins with the same word with which the first concluded, it is termed *anadiplosis*. As in the following instance: Let us think no price too great for truth; truth cannot be bought too dear. This figure generally suits best with solemn discourses.

10. *Epanodos* is the inversion of a sentence, or repeating it backwards, so that it takes in the two last figures; for it both begins and ends with the same word, and the same word is likewise repeated in the middle. It serves to illustrate and enforce the sense, by setting it in two opposite views. As in that expression of the prophet:—‘Wo unto them who call good evil, and evil good; who put darkness for light, and light for darkness!’ &c.

II. Those figures which consist in a repetition of words of a like sound or signification, or both, are four: *paronomasia*, *homoioputon*, *synonymia*, and *derivatio*; the two first of which respect words that are similar in sound only, the third in sense, and the last in both.

i. When two words very near in sound, but different in sense, respect each other in the same sentence, it is called *paronomasia*. As when we say, After a feast comes a fast; and, A friend in need is a friend indeed. We usually call it a pun, which, when new, and appositely used, passes for wit, and serves to enliven conversation. Nor is it wholly to be excluded from grave and serious discourses; for a witty jest has sometimes had a better effect than a solid argument, and prevailed with those who could not be moved by close reasoning. And therefore Cicero and the best speakers have sometimes recourse to it.

ii. When the several parts of a sentence end with the same case, or tense of a like sound, this is the figure named *homoioputon*. As thus:—No marvel though wisdom complain that she is either wilfully despised, or carelessly neglected; either openly scorned, or secretly abhorred. This figure is esteemed most beautiful when the parts are all or nearly of the same length; as it adds to the harmony of the period, and renders the cadence of the several members more musical. The Greek rhetoricians were much addicted to it, particularly Isocrates; but some of the best orators avoided it, as having too much the appearance of art.

iii. The next figure is *synonymia*. Strictly

speaking, synonymous words are those which have exactly the same sense; but, there being few such, the term is extended to comprehend words of a near affinity in their signification, which in discourse are frequently put for one another. So, to desire, and entreat, are used as equivalent terms; and esteem and honor are often taken for synonymous words, though they clearly have not the same sense. When two or more such words come together they constitute this figure.

iv. When such words as spring from the same root, as justice, just, injustice, unjust, and the like, come together in the same sentence, they make the figure called *derivation*. This figure receives an additional beauty when repeated in two opposite members; as, He wished rather to die a present death than to live a miserable life.

II. *Figures of sentences*.—Of these some are principally adapted for reasoning, and others to move the passions.

i. Figures suited for proof, are six: *Prolepsis*, *hypobole*, *anacoinosis*, *epitrope*, *parabole*, and *antithesis*.

1. *Prolepsis*, or anticipation, is so called, when the orator first starts an objection, which he foresees may be made either against his conduct or cause, and then answers it. Its use is to prevent the exceptions of an adversary, which cannot afterwards be introduced with so good a grace; and it serves to conciliate the audience, while the speaker appears desirous to represent matters fairly, and not to conceal any objection which may be made against him. The occasions of this figure are various; and Cicero's orations abound with examples, as well as those of our best speakers in parliament.

2. *Hypobole*, or subjection, is similar; when several things are mentioned that seem to make for the contrary side, and each of them refuted in order. It consists of three parts, when complete; a proposition, an enumeration of particulars with their answers, and a conclusion.

3. *Anacoinosis*, or communication; by which the speaker deliberates or expostulates either with the judges, the hearers, or the adversary. Cicero uses it in addressing the judges against Verres; and the sacred writers sometimes introduce God himself thus expostulating with mankind. See Malachi i. 6.

4. *Epitrope*, or concession, grants one thing, to obtain another more advantageous. It is either real or feigned; and either the whole of a thing, or a part only, is granted. Nothing more confounds an adversary than to grant him his whole argument, and at the same time either to show that it is nothing to the purpose, or to offer something else to invalidate it. Thus Cicero, in his defence of Milo, represents the taking off Clodius, with which Milo was accused, as a glorious action; after he has shown that Milo's servants did it without his knowledge.

5. *Parabole*, or similitude, illustrates a thing by comparing it with some other to which it bears a resemblance. Similitudes are indeed but weak arguments, but where the design is not so much to prove what is doubtful as to set things in a clear and agreeable light, they are very proper figures.

6. *Antithesis* is a contrast or opposition, by which things contrary or different are compared, to render them more evident. Thus Cicero says, 'the Roman people hate private luxury, but love public grandeur.' This is a very florid figure; and suited no less for amplification than proof. It is esteemed a beauty in this figure when any of the members are inverted, which some call *antimetathesis*. As where Cicero opposes the conduct of Verres, when governor of Sicily, to that of Marcellus who took Syracuse the capital of that island. To this figure may also be referred *oxymoron*, or *seeming contradiction*; that is, when the parts of a sentence disagree in sound, but are consistent in sense. As when Ovid says of Althea, that she was impiously pious. And so Cato used to say of Scipio Africanus, that 'he was never less at leisure, than when he was at leisure; nor less alone than when alone.' Dr. Blair observes, 'contrast has always this effect, to make each of the contrasted objects appear in the stronger light. White, for instance, never appears so bright as when it is opposed to black, and when both are viewed together. Antithesis therefore may, on many occasions, be employed to advantage, to strengthen the impression which we intend that any object should make. To render an antithesis more complete, it is always of advantage that the words and members of the sentence expressing the contrasted objects be similarly constructed, and made to correspond to each other. At the same time, the frequent use of antithesis, especially where the opposition in the words is nice and quaint, is apt to render the style disagreeable. A maxim or moral saying properly enough receives this form; but where a string of such sentences succeed each other, where this becomes an author's favorite and prevailing manner of expressing himself, his style is faulty; and upon this account Seneca has been often and justly censured.' There is another kind of antithesis, which consists in surprising us by the unexpected contrasts of things which it brings together; but it is wholly beneath the dignity of an orator, and is fit only for pieces of humor, calculated to excite ridicule.

ii. Figures suited to move the passions, are

1. *Epanorthosis*, or *correction*, by which the speaker either recalls or amends what he had last said. Sometimes one or more words are recalled, and others substituted in their room; at other times, without recalling what has been said, something else is substituted as more suitable. Cicero, in his defence of Milo, speaking to the judges concerning Clodius, says, 'are you only ignorant what laws, if they may be called laws, and not rather torches and plagues of the state, he was about to impose and force upon us?' Sometimes the correction is made by substituting something contrary to what had been said before; 'Cæsar,' says Cicero, 'when Antony was most enraged, and we dreaded his cruel return, raised a very powerful army of invincible veterans; to effect which he threw away his whole estate. Though I have used an improper word; he did not throw it away, but employed it for the safety of the government.'

2. *Paralepsis*, or *omission*, is a figure, when

the speaker pretends to omit, or pass by, what at the same times he declares. It is used either in praise or dispraise. Thus Cicero, in his defence of Sextius; 'I might say many things of his liberality, kindness to his domestics, his command in the army, and moderation during his office in the province; but the honor of the state presents itself to my view; and calling me to it, advises me to omit these lesser matters.' There is a beautiful instance of this figure in St. Paul's epistle to Philemon, ver. 19. Hermogenes observes that this figure is principally used on three occasions: either when things are small, but yet necessary to be mentioned; or well known, and need not be enlarged on; or ungrateful, and therefore to be introduced with caution.

3. *Parrhesia*, or *reprehension*. The orator sometimes prepares his hearers for this by commending them first, urging the necessity of it, representing his great concern for them as his motive, or joining himself with them. Thus Cicero charges the senate with the death of Servius Sulpicius, for sending him to Mark Antony under a very ill state of health. His design was to make them agree to a motion he was to make, that a statue and monument might be erected to his memory at the public expense. Sometimes the orator assumes an air of reproof, with a view only to pass a compliment with a better grace. As Cicero in his address to Cæsar, when he says, 'I hear that saying from you with concern, that you have lived long enough, either for the purposes of nature or glory: for nature perhaps, if you think so; and, if you please, for glory; but what is principally to be regarded, not for your country.'

4. *Aparithmesis*, or *enumeration*, is when that which might be expressed by a few words is branched out into several particulars. Cicero, in pleading for the Manilian law, where his design is to conciliate the esteem of the people to Pompey, thus enlarges upon his character: 'What can be said either worthy of him, or new to you, or which every one has not heard? For those are not the only virtues of a general which are commonly thought so; labor in affairs, courage in dangers, industry in acting, despatch in performing, design in contriving; which are greater in him than in all other generals we have ever seen or heard of.'

5. *Exergasia*, or *exposition*, has an affinity with the former figure; but differs in this, that it consists of several equivalent expressions, or nearly such, to represent the same thing in a stronger manner; whereas the other enlarges the idea by an enumeration of different particulars. So that this figure has a near relation to synonymia.

6. *Aporia*, or *doubt*, expresses the debate of the mind with itself upon a pressing difficulty. A person in such a state is apt to hesitate, or start several things successively, without coming to any fixed resolution. Of this kind is that of Cicero for Cluentius, when he says, 'I know not which way to turn myself. Shall I deny the scandal thrown upon him of bribing the judges? Can I say the people were not told of it? &c.' Orators sometimes begin their discourse with this figure. A diffidence of mind at first is not unbecoming, but graceful; it carries in it an air of modesty,

and tends very much to conciliate the affections of the hearers.

7. Sometimes a passion has that effect, not so much to render a person doubtful what to say, as to stop him in the midst of a sentence, and prevent his expressing the whole of what he designed; and then it is called *apostopesis*, or *concealment*. It denotes different passions; as anger, which, by its heat and vehemence, causes persons to break off abruptly in their discourse: and Cicero, in a letter to Cassius, uses it to express fear, when he says to him, 'Brutus could scarcely support himself at Mutina; if he is safe we have carried the day. But if—heaven avert the omen! all must have recourse to you.' His meaning is, 'If Brutus should be defeated.'

8. *Erotesis*, or *interrogation*. Every question is not figurative; but it becomes figurative, when the putting it by way of question gives it life and spirit. As when Cicero says, 'Catiline, how long will you abuse our patience? Do not you perceive your designs are discovered?' It serves also to press and bear down an adversary. Thus in his defence of Plancius: 'I will make you this offer, choose any tribe you please, and show by whom it was bribed; and if you cannot, as I believe you will not, I will prove how he gained it. Is this a fair contest? Will you engage on this foot? I cannot give you fairer play. Why are you silent? Why do you dissemble? Why do you hesitate? I insist upon it, urge you to it, press it, require, and even demand it of you.'

9. *Echphosis*, or *exclamation*, is a vehement extension of the voice, occasioned by a commotion of mind, naturally venting itself. This figure is used by Cicero to express a variety of passions.

10. *Epiphonema*, or *acclamation*, has a great affinity with the figure. It is so called, when the speaker, at the conclusion of his argument, makes some lively and just remark upon what he has been saying, to give it the greater force. It is not so impetuous as exclamation, being usually expressive of the milder and more gentle passions. When Cicero has shown that recourse is never to be had to force, but in cases of the utmost necessity, he adds, 'thus to think, is prudence; to act, fortitude; both to think and act, perfect and consummate virtue.'

11. *Apostrophe*, or *address*, is when the speaker breaks off from the series of his discourse, and addresses himself to some particular person present or absent, living or dead; or even to inanimate nature: thus he has an opportunity of saying many things with greater freedom than if immediately addressing the persons themselves. He can admonish, chide, or censure, without giving offence. Thus Cicero, in his defence of Milo, expressing his concern if he should not succeed in it, says, 'And how shall I answer it to you, my brother Quintus, the partner of my misfortunes, who art now absent?' An appeal to heaven, or any part of inanimate nature, has something very sublime and solemn in it, which we often meet with in sacred writ. So the divine prophet: 'Hear, O heavens! and give ear, O earth! for the Lord hath spoken.' And Jeremy: 'Be astonished, O ye heavens, at this.' See APOSTROPHE.

12. *Prosopopœia*, or the *fiction of a person*: by which either an absent person is introduced speaking; or one who is dead, as if he were alive and present; or speech is attributed to some inanimate being. There is no figure, perhaps, which serves better purposes to an orator than this. For by it he is enabled to call in all nature to his assistance. There is scarcely any thing fit to be said, but may be introduced this way. When he has severe things to say, and which may give offence as coming from himself, he avoids this by putting them into the mouth of some other person, from whom they will be better taken; or makes inanimate nature bring a charge, or express a resentment, to render it the more affecting: and by the same method he sometimes secures himself from a charge of flattery, in carrying a compliment too high. Cicero, in his oration for Balbus, introduces Marius, who was dead, to plead in his defence: 'Can Balbus,' says he, 'be condemned, without condemning Marius for a like fact? Let him be present to your thoughts, since he cannot be so in person. Let him tell you, he was not unacquainted with leagues, void of examples, or ignorant of war.' And again, in his first invective against Catiline, he represents his country as expostulating with himself, and upbraiding him for suffering such a criminal as Catiline to live. In the management of this figure, care should be taken that what is said be always consistent with the character introduced.

In treating upon figures, we have hitherto considered them separately; but some expressions consist of a complication of them, and may come under the denomination of several figures, as well verbal as those of sentences, differently considered. Examples of this the judicious reader will easily discover, both in ancient and modern orations.

IV. *Of style, and its different characters.*—The word style properly signifies the instrument which the ancients used in writing. For as they commonly wrote upon thin boards covered over with wax, and sometimes upon the barks of trees, they made use of a long instrument like a bodkin, pointed at one end, with which they cut their letters, and broad at the other, to erase any thing they chose to alter. This the Latins called *stylus*. But, though this be the first sense of the word, yet afterwards it came to denote the manner of expression. In this sense we likewise use it, by the same kind of trope that we call any one's writing his hand. Style, then, in the common acceptation of the word, is the peculiar manner in which a man expresses his conceptions by means of language. The reasons which occasion a variety of style, we cannot here discuss.

The foundation of a good style is good sense. Cicero recommends to all who are candidates for eloquence, and desirous to become masters of a good style, to write much. This affords them an opportunity to digest their thoughts, and weigh their words and expressions so as to give every thing its proper force and evidence: while, by reviewing a discourse composed, we correct its errors or supply its defects.

Different countries have not only a different

language, but a peculiarity of style. The eastern nations, for instance, had a lofty and majestic manner of speaking. Their words are full and sonorous, their expressions strong and forcible, and warmed with the most lively and moving figures. This is evident from the writings of the Old Testament, in which we find a most agreeable mixture of simplicity and dignity. On the contrary, the style of the more northern languages generally partakes of their climate: 'There is,' says Mr. Addison, 'a certain coldness and indifference in the phrases of our European languages, compared with the oriental forms of speech. And it happens very luckily, that the Hebrew idioms run into the English tongue with a peculiar grace and beauty. Our language has received innumerable elegancies and improvements from that infusion of Hebraisms, which are derived to it out of the poetical passages in holy writ. They give a force and energy to our expressions, warm and animate our language, and convey our thoughts in more ardent and intense phrases, than any that are to be met with in our own tongue. There is something so pathetic in this kind of diction that it often sets the mind in a flame, and makes our hearts burn within us.' Spect. No. 405.

The style of the same nation has been found also to vary with the great events of its history and the prevailing manners. The Athenians, while they continued a free state, were an active, industrious and frugal people; and cultivated the arts and sciences beyond any other nation: but as they had powerful enemies, and were exceedingly jealous of their liberties, this preserved them from luxury. Their style was at this time agreeable to their conduct; accurate and close, but very expressive. The Asiatics, on the other hand, were more gay and loose in their manners, devoted to luxury and pleasure; and accordingly they affected a florid and swelling style, filled with redundancies and superfluities of expression. The Rhodian style was a medium between these two; neither so concise and expressive as the Attic, nor so loose and redundant as the Asiatic. Quintilian says it had a mixture of its author, and the humor of the people; and, like plants set in a foreign soil, degenerated from the Attic purity, but not so wholly as to lose it. They first received it from Æschines, who, being worsted in his famous contest with Demosthenes, retired thither, and taught them rhetoric.

Cicero tells us that the first Latin historians aimed at nothing more than barely to make themselves intelligible, with as much brevity as possible. Those who succeeded them advanced a step further; and gave a better turn and cadence to their sentences, though still without ornament. But afterwards, when the Greek language became fashionable at Rome, by copying after Herodotus, Thucydides, Xenophon, and others, they gradually introduced all their beauties into their own tongue, which in Cicero's time was brought to its highest perfection. But it did not long continue in that state. A degeneracy of manners soon corrupted their language, which Quintilian very much regrets. The case was the same with respect to the Greek tongue; though its purity continued much longer than that of the

Latin. Nor can any language be exempt from the common fate of all human productions; which have their beginning, perfection, and decay. Besides, there is a sort of fashion even in language. Cicero tells us that the most ancient Greek orators whose writings were extant in his time, such as Pericles, Alcibiades, and others, were subtle, acute, concise, and abounded in sense rather than words. But another class that followed them, among whom were Critias, Theamenes, and Lysias, retained the good sense of the former, while they improved their style. After these came Isocrates, who added all the flowers and beauties of eloquence: and, as he had many followers, they applied these ornaments and decorations according to their different tastes; some by pomp and splendor, and others by greater force and energy. In this last way Demosthenes principally excelled. Afterwards they sunk into a softer and smoother manner, not less exact and florid, but more cold and lifeless.

But the chief distinction of style arises from the different subjects of discourse. The same way of speaking no more suits all subjects than the same garment would all persons and all ranks. The style, therefore, should always be adapted to the subject, which rhetoricians have reduced to three ranks: viz. the low or plain style, the middle or temperate, and the lofty or sublime: which are likewise called characters, because they denote the quality of the subject upon which they treat. This division of style into three characters was taken notice of very early by ancient writers. Some observe it even in Homer, who assigns the sublime to Ulysses, when he represents him so copious and vehement an orator that his words came from him like winter snow; while he describes Menelaus as a polite speaker, but concise and moderate; and represents Nestor's manner as between these two, not so high as the one, nor so low as the other; but smooth, even, and pleasant, or, as he expresses it, more sweet than honey. Quintilian observes that, although accuracy and politeness were general characters of the Attic writers, yet among their orators, Lysias excelled in a low and familiar style; Isocrates in elegance, smoothness, and the fine turn of his periods; and Demosthenes in fire and rapidity, by which he carried all before him. Gellius tells us that the like difference was found in the three philosophers who were sent from the Athenians to Rome (before the Romans had any relish for the polite arts) to solicit the remittance of a fine laid upon them. Carneades was vehement and rapid in his harangues; Critolaus neat and smooth; and Diogenes modest and sober. The eloquence of these orators, and the agreeable variety of their manner, so captivated the Roman youth, and inflamed them with such a love of the Grecian arts, that old Cato, who did all he could to check it by hurrying away the ambassadors, could not prevent their vigorous pursuit of them, till the study became in a manner universal. And the old philosopher himself afterwards learned the Greek language, when it became more fashionable; which lord Bacon styles a punishment upon him for his former crime. It seldom happens that the same

person excels in each of these characters. They seem to require a different genius, and most orators are naturally led to one of them more than another; though all of them are requisite for an orator on different occasions. See *STYLE*.

V. *Of the style of an orator.*—The style of an orator must occasionally comprehend all the characters of low, middle, and sublime, as they are applied by him in the different parts of his province. For the language must be suited to the subject, and the different views of the speaker necessarily occasion a variety in the manner of expression. Now an orator has three objects in view; to prove what he asserts, to represent it in an agreeable light, and to move the passions. Each of these parts of his province requires a different style. The low style is most proper for proof and information; the middle style is best suited for pleasure and entertainment; but the sublime is necessary to influence the passions. Here the orator calls in all the assistance of nature and art; the most raised and lofty thoughts, clothed with the brightest and strongest coloring, enter into this character. As short periods are proper in the low style, so less care is necessary in their turn and cadency. But the words should be well chosen and proper, suited to the ideas they are designed to convey; the expressions plain and clear, and the artificial ornaments few and modest. Bold or lofty metaphors, or in which the allusion is dark and remote, ought to be avoided. Of these, such as come nearest to the natural way of expression are most proper for this style.

As the middle style is more adapted for pleasure and delight, it admits of all those beauties and ornaments which soothe and entertain the mind. It has more force and energy than the low style, but less than the sublime. Smooth and harmonious numbers, well-turned periods, of a just length, delightful cadence, and accurate disposition of the words, are suited to this style. The most beautiful and shining tropes, which strike the fancy, and all those figures which, by repetition, similitude, or proportion of sounds, please and gratify the ear, help to form this character.

But it is the sublime style which perfects the orator. This requires the most forcible and emphatical words, the boldest metaphors, and strongest figures. In verbal figures, repetitions, synonymes, gradations, contraries, with others of a like force and energy, are chiefly employed here. But figures of sentences are the most considerable, and principally contribute to make up this character. Among these are similes taken from lofty subjects, *protopopœia*, *apostrophe*, exclamation, *epiphonema*, *aposiopesis*, and others of a like nature. But due care must be taken of the form, construction, and harmony of the periods; which seem best disposed when long and short ones are intermixed. For, though round and swelling periods carry in them something grand and majestic, yet they often move too slow to strike the passions; whereas short ones are more acute and pungent, and, by returning quick, awaken the mind, and raise the passions. But, to render it complete, it must

be supported with strong reason, grandeur of thought, and sentiments every way equal to the expression; without which it will be liable to swell into bombast. Mr. Burke's admirable *Essay on the Sublime and Beautiful* has long been a standard work on this part of our subject.

PART IV.

OF PRONUNCIATION.

I. Of pronunciation in general.—Pronunciation is by some of the ancients called action: though, if we attend to the proper signification of these words, the former respects the voice, and the latter the gestures and motions of the body. But, if we consider them as synonymous, in this large sense pronunciation or action may be said to be a suitable conformity of the voice, and the several motions of the body, in speaking, to the subject matter of the discourse. The best judges among the ancients have represented this as the principal part of an orator's province, whence he is chiefly to expect success in the art of persuasion. When Cicero, in the person of Crassus, has largely and elegantly discoursed upon all the other parts of oratory, coming at last to speak of this, he says: 'All the former have their effect as they are pronounced. It is the action alone that governs in speaking; without which the best orator is of no value, and is often defeated by one, in other respects, much his inferior.' And he says that Demosthenes was of the same opinion, who, when he was asked what was the principal thing in oratory, replied action; and being asked again a second and a third time, what was next considerable, he still made the same answer; by which he intimated that the whole art did in a manner consist in it. And indeed, if he had not judged this highly necessary for an orator, he would scarcely have taken so much pains in correcting those natural defects under which he labored at first, in order to acquire it. See DEMOSTHENES. Nor was he less careful in endeavouring to gain the habit of a becoming and decent gesture; for which purpose he used, we are told, to pronounce his discourses alone before a large glass. Quintilian says that 'it is not of so much moment what our compositions are, as how they are pronounced; since it is the manner of the delivery by which the audience is moved.' And he therefore asserts that 'an indifferent discourse, assisted by a lively and graceful action, will have greater efficacy than the finest harangue, which wants that advantage.'

The truth of this sentiment of the ancients might be proved from many instances. Hortensius, a contemporary with Cicero, and, while living, next to him in reputation as an orator, was highly applauded for his action. But his orations after his death, as Quintilian tells us (for there are none extant), did not appear answerable to his character. But Cicero himself is a decisive instance. After the death of Pompey, when Cæsar had usurped the government, many of his acquaintance interceded with him in behalf of their relations and friends, who had been of the contrary party in the late wars.

Among others, Cicero solicited for his friend Ligarius; which Tubero, understanding, who owed Ligarius a grudge, he opposed it, and undertook to represent him to Cæsar as unworthy of his mercy. Cæsar himself was prejudiced against Ligarius; and therefore, when the cause was to come before him, he said, 'we may venture to hear Cicero display his eloquence; for I know the person he pleads for to be an ill man, and my enemy.' But, in the course of his oration, Cicero so worked upon his passions, that, by the frequent alteration of his countenance, the emotions of his mind were very conspicuous. And when he came to touch upon the battle of Pharsalia, which had given Cæsar the empire of the world, he represented it in that moving and lively manner that Cæsar could no longer contain himself, but was thrown into such a fit of shivering that he dropped the papers which he held in his hand. This was the more remarkable, because Cæsar was himself one of the greatest orators of that age, knew all the arts of address, and consequently was better prepared to guard against them. But neither his skill nor resolution was of sufficient force against the power of oratory; the conqueror of the world became a conquest to the charms of Cicero's eloquence; so that, contrary to his intention, he pardoned Ligarius. This oration is still extant; but can scarcely be thought, in reading it, to have had so surprising an effect; which must therefore have been chiefly owing to the wonderful manner of the speaker.

The more natural the pronunciation is, it will be the more moving. The ancients, therefore, make it one qualification of an orator, that he be a good man; because a person of this character will make the cause he espouses his own, and the more sensibly he is touched with it himself, his action will be the more natural. Cicero says, 'it is certain that truth in every thing excels imitation; but, if that was sufficient of itself in action, we should have no occasion for art.' In his opinion, therefore, art, if well managed, will assist and improve nature. Sometimes the force of it is so great that, even where it is wholly counterfeit, it will work the effect of truth. This is well known to those who frequent the theatre. The warmth of expression and vehemency of action should rise in proportion to the importance of the subject and concern of the speaker. The learned author of *Dialogues on Eloquence*, p. 92, says, 'the Romans had a very great talent this way, and the Greeks a greater. The eastern nations excelled in it, and particularly the Hebrews. Nothing can equal the strength and vivacity of the figures they employed in their discourse; and the actions they used to express their sentiments, such as putting ashes on their heads, tearing their garments, and covering themselves with sackcloth under any deep distress and sorrow of mind.' As action, therefore, was judged so necessary a qualification in an orator among the ancients, so they made use of several methods and expedients for the better attaining it. Quintilian gives directions how young persons should be taught to pronounce, when they first learn to read. The ancients likewise had persons whom they

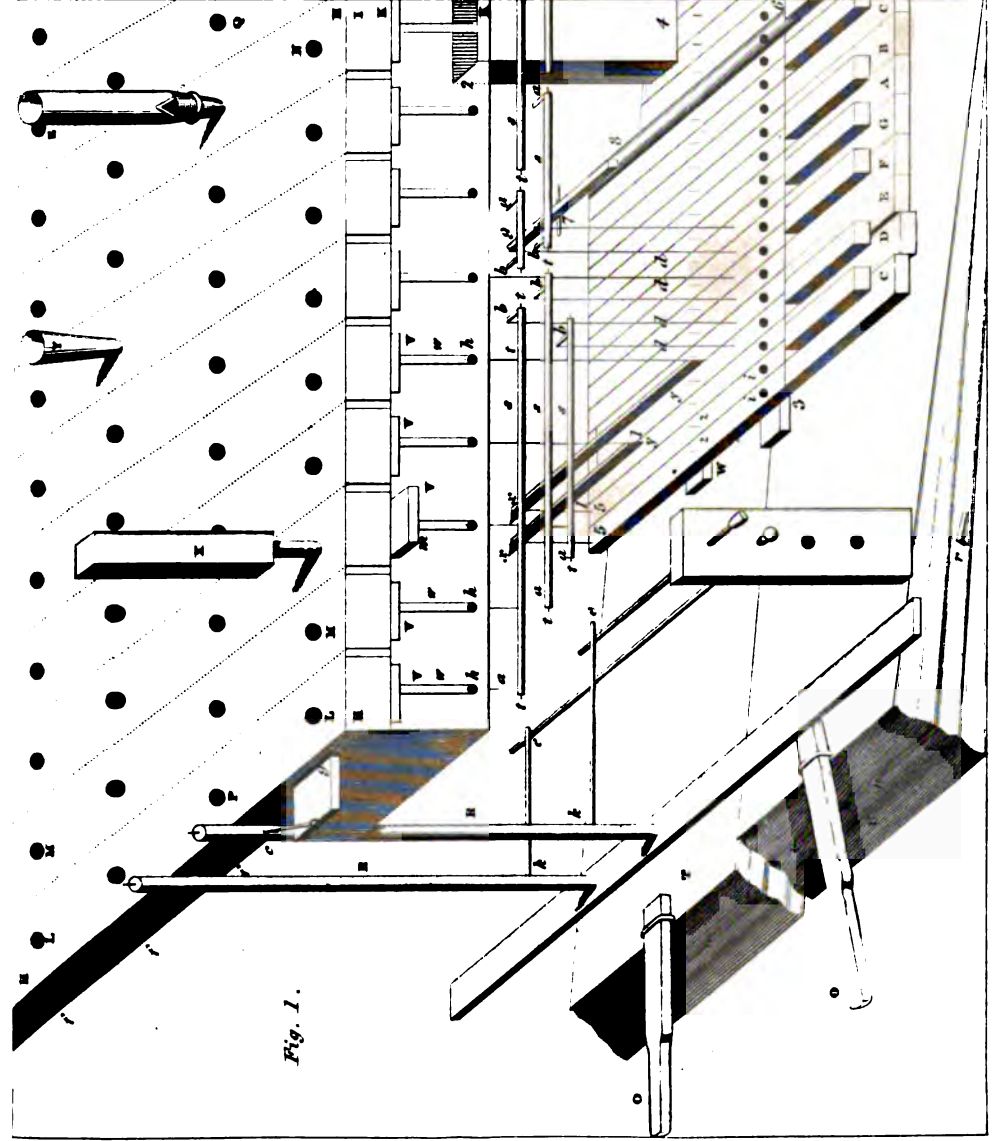


Fig. 1.



Fig. 2.

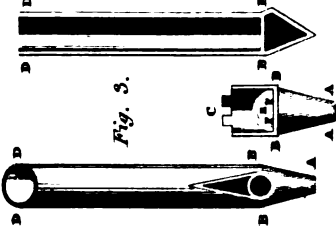
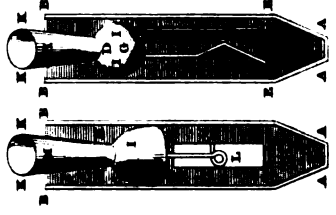


Fig. 3.

Fig. 4.



called *phonæsti*, whose proper business was to teach them how to regulate their voice; and others who instructed them in the whole art of pronunciation, both as to their voice and gestures. These last were generally taken from the theatre, being eminent experienced actors.

But Cicero well represents the distinction between the action of an orator and that of an actor. 'The action of the body,' he says, 'ought to be suited to the expressions, not in a theatrical way, mimicking the words by particular gesticulations, but in a manner expressive of the general sense, with a sedate and manly inflection; not taken from the stage and actors, but from the exercise of arms and the palestra.' 'Every gesture and motion of the comedians,' says Quintilian, 'is not to be imitated, nor to the same degree.' When thus prepared, they were sent to the schools of the rhetoricians, to cultivate their style, and acquire the whole art of eloquence; particularly a just and accurate pronunciation. And, as the Greeks were most celebrated for their skill in oratory, the Roman gentry and nobility generally sent their sons abroad, under the tuition of some Grecian master. Thus Cicero was sent to Rhodes under the famous Molo, and Brutus under Pammenes; Cæsar was going to the same place when taken by pirates; and Augustus afterwards studied there under Apollodorus. After this pains and industry, the ancients did not think themselves sufficiently qualified to take upon them the character of orators, till they got together their friends, and declaimed before them in private; which gave them an opportunity to correct any defects at first, before they became habitual.

II. *Of the Voice.*—The influence of sounds, either to raise or allay our passions, is evident from music: and certainly the harmony of a fine well pronounced discourse is as capable of moving us. As persons are differently affected when they speak; so they naturally alter the tone of their voice. It rises, sinks, and has various inflections, according to the state and disposition of the mind. When the mind is calm and sedate the voice is moderate and even; when the former is dejected with sorrow the latter is languid; and, when that is enflamed by passion, this is raised and elevated. It is the orator's business, therefore, to endeavour that the tone of his voice appear natural and unaffected. For this end, he must suit it to the nature of the subject. Some deliver a discourse in a low drawling manner; others hurry on in so loud and boisterous a tone, as if they imagined their hearers were deaf. But all the harmony of speech lies in the proper temperament of the voice between these extremes. The principal properties of voice may be referred either to quantity or quality.

1. *The quantity* of the voice consists in its highness or lowness, swiftness or slowness, and the intermediate degrees between them.

i. Every person who speaks in public should endeavour to fill the place where he speaks. But still he ought to be careful not to exceed the natural key of his voice. If he does, it will neither be soft nor agreeable; but either harsh and rough, or too shrill and squeaking. Besides, he will not be able to give every syllable its full and

distinct sound; which will render what he says obscure.

ii. The like caution is to be used against the contrary extreme, that the voice be not dropped, and suffered to sink too low. This will give the speaker pain in raising it again to its proper pitch, and be no less offensive to the hearers. The medium is a moderate and even voice. But this is not the same in all; that which is moderate in one would be high in another. Every person therefore must regulate it by the natural key of his voice. A calm and sedate tone is generally best; as a moderate and distinct sound is most pleasing to the ear. But this equality of the voice must also be accompanied with variety. Nothing is less pleasing than a discourse pronounced throughout in one continued monotony. The gradations, whether higher or lower, should be gentle and regular; an even tone of voice being best fitted to keep up attention. But the voice ought to agree with the style; and as the orator's province is not only to apply to the mind, but likewise to the passions, these require a great variety of the voice, high or low, vehement or languid, according to the nature of the passion he designs to affect.

iii. That some addresses ought to be pronounced faster than others is manifest. Gay and sprightly ideas should not only be expressed louder, but also faster, than such as are sad and melancholy. And, when we press an adversary, the voice should be brisk and quick. A precipitant and hasty pronunciation, however, is culpable, as well as speaking too slow. This argues a heaviness in the speaker; and, as he appears cool himself, he can never expect to warm his hearers. In long periods, the voice should be favored by beginning low and sedately, that it may hold to the end without respiration; or, if not, the breath ought to be recovered without sinking the voice. For, if once the voice drop for want of breath before the period be finished, not only the beauty but the sense will be injured. Quintilian lays a great stress upon a due attention to these pauses; and says, 'Though it may appear not so considerable in itself, yet all the other virtues of a good pronunciation are deficient without it.'

2. The chief *qualities* of the voice are strength, clearness, fullness, and smoothness; and various defects of the voice may be helped by care and attention. Temperance is a great preservative of the voice, and all excess is prejudicial to it. The voice must suffer, if the organs of speech have not their proper tone.

i. A strong voice is serviceable to an orator, but he who has a weak one should be careful not to strain it. He ought to begin low, and rise gradually to such a pitch as the key of his voice will easily carry him, without being obliged to sink afterwards. Frequent inflections of the voice will be some assistance to him. But he should take care to speak deliberately, and ease his voice, by allowing due time for respiration at all the pauses. It is an extreme much less inconvenient for such a person to speak too slow than too fast. But this defect of a weak voice is often capable of being helped by proper methods; as is evident from the instance of Demosthenes.

ii. A voice is said to be clear when the organs of speech are suited to give every single letter, and all the combinations of them in syllables and words, their proper and distinct sound. Such a tone of voice is very agreeable to the hearers; and no less so to the speaker, as it saves him a great expense of spirits. For a moderate voice, if clear, will be as distinctly heard as one much louder, if obscure. This is a great advantage to the speaker, because he can better help his voice under command, and modulate it at pleasure. An obscure and confused voice is not always occasioned by a deficiency in the organ; but is often the effect of a bad habit. Some, either from want of due care at first, or from inadvertency and negligence afterwards, run into a very irregular and confused manner of expressing their words; either by misplacing the accent, confounding the sound of the letters, or huddling the syllables one upon another, so as to render what they say often unintelligible.

iii. A full voice fills the ear, but it is often not pleasant. And therefore, to render it so, it should be frequently varied. Yet it seems better suited to the character of an orator than a small and shrill voice; because it has something in it more manly. Those who have the misfortune of a very small voice, should be cautious of raising it to too high a pitch, especially at once; because the sudden compressure of the organ is apt to occasion a squeaking and disagreeable sound.

iv. A soft and smooth voice is the most musical, especially if it be flexible.

III. *Of gesture.*—By *gesture* is meant a suitable conformity of the motions of the countenance and several parts of the body in speaking. It is not agreed among the learned, whether voice or gesture has the greater influence in oratory. But, as the latter affects us by the eye as the former does by the ear, gesture seems to have this advantage, that it conveys the impression more speedily to the mind. Nor is its influence less upon our passions; nay, in some instances, it appears to act more powerfully. A cast of the eye shall express desire in as moving a manner as the softest language; and a different motion of it resentment. Nor is it in some respects less various and expressive than language. Cicero tells us, he often diverted himself by trying this with Roscius the comedian; who could express a sentence as many ways by his gestures, as he himself by words. And some dramas, called pantomimes, are carried on wholly by mutes, who perform every part by gestures only, in a way very intelligent, as well as entertaining to the spectators. Well, therefore, might Cicero call action (or gesture) the language of the body, since it is capable in so lively a manner to express both our ideas and passions. But, with respect to oratory, gesture may be very properly called the second part of pronunciation; in which, as the voice should be suited to the impressions it receives from the mind, so the several motions of the body ought to be accommodated to various tones and inflections of the voice. When the voice is even and moderate, little gesture is required; and nothing is more unnatural than violent motion, in discoursing upon ordinary and familiar subjects. The motions of the

body should rise, therefore, in proportion to the vehemence and energy of the expression, as the natural and genuine effect of it.

It is hardly necessary to mention that, by the uniform practice of all nations, the most proper gesture for a public speaker is to address his audience standing. But though standing appears to be the most proper posture, yet it is very unbecoming for the body to be entirely without motion. It should not long continue in the same position, but be constantly changing imperceptibly. There ought to be no appearance of stiffness, but a certain ease and pliancy, suiting every expression; by which means, when a greater degree of motion is necessary, it will appear less sudden and vehement; for as the raising, sinking, and various inflections of the voice must be gradual, so likewise should the motions of the body. It is only on some particular occasions that a hasty impetuosity is proper in either case.

The head, in calm and sedate discourse, ought to keep its natural state, an upright posture. However, it should not be long without motion, but gently turn, sometimes on one side, and sometimes on the other, as occasion requires. It should always accompany the other actions of the body, and turn on the same side with them; except when aversion to any thing is expressed, which is effectually done by stretching out the right hand, and turning the head to the left. But it is the countenance that chiefly represents both the passions and disposition of the mind. By this we supplicate, threaten, soothe, invite, forbid, consent, or refuse, without speaking, the several parts of the face bearing their part, and contributing to the proper and decent motion of the whole. In a calm and sedate discourse, all the features retain their natural appearance. In sorrow, the forehead and eyebrows lour, and the cheeks hang down. But, in joy and cheerfulness, the forehead and eyebrows are expanded, the cheeks contracted, and the corners of the mouth drawn upwards. Anger and resentment contract the forehead, draw the brows together, and thrust out the lips; and terror elevates both the brows and the forehead.

Cicero advises that the greatest care should be taken in the management of the eye. We readily guess at a person's intention by observation of this member; any sudden change or emotion of the mind being presently followed by an alteration in the look. In speaking, therefore, upon pleasant and delightful subjects, the eyes are brisk and cheerful; as, on the contrary, they sink and are languid in delivering any thing melancholy. A gentle and moderate motion of the eyes is in an orator most suitable, directed occasionally to all parts of his audience, and gradually turning from side to side with an air of respect and modesty. The shoulders ought not to be elevated; as it contracts the neck, and hinders the proper motion of the head. Nor, on the other hand, should they be drawn down and depressed, as this occasions a stiffness both on the neck and the whole body. Their natural posture is most easy and graceful. A continued motion of the arms any way, is to be avoided. Their action should generally be very moderate, and follow that of the hands.

Quintilian seems to think the hands as necessary and powerful in action, as Cicero the eyes. 'The hands,' says he, 'without which all gesture is lame and weak, have a greater variety of motions than can well be expressed; for they are almost equal to our words. In short he styles them 'the common language of all mankind.' In admiration, and addresses to heaven, they must be elevated, but never raised above the eyes: in speaking of things below us, they are directed downwards. Side motions should generally begin from the left, and terminate gently on the right. In demonstrating, addressing, and on several other occasions, they are moved forward; and in threatening sometimes thrown back. But, when the orator speaks of himself, his right hand should be gently laid on his breast. When no other motion is necessary, the hands should be kept about as high as the breast. This is not only a graceful, but likewise the most easy posture, and gives the least strain to the muscles. They should never be suffered to hang down, or loll upon a cushion or bar. The left hand should never move alone, but accommodate itself to the motions of the right. In promises and expressions of compliment, the motions of the hands should be gentle and slow; but in exhortations and applause more swift. The hands should generally be open; but in expressions of compunction and anger they may be closed. All finical and trifling actions of the fingers ought to be avoided. The feet should continue steady, and not give the body a wavering and giddy motion by frequently shifting; though some persons fall into that habit without moving their feet. Philip, the Roman orator, was wont to tell his friends, 'he was never fit to talk, till he had warmed his arm.' He doubtless, therefore, used a more violent motion with his arms and hands than is common with us. And Cicero calls the arm projected the orator's weapon.

To speak low at first has the appearance of modesty, and is best for the voice: which, by rising gradually, will with more ease be carried to any pitch that may be afterwards necessary, without straining it. However, some variation of the voice is always proper to give it harmony. Sometimes it is not improper for an orator to set out with a considerable degree of warmth, expressed by such an elevation of the voice and gestures of the body as are suited to represent the emotions of his mind. But this is not ordinarily the case. We have some happy instances of it in Cicero; as in his oration for Roscius Amerinus, where the heinousness of the charge could not but excite his indignation against the accusers. And in that against Piso, and the two

first against Catiline, which begin in the same manner, from the resentment he had conceived and wished to inspire against their persons and conduct.

In narration the voice ought to be raised to a higher pitch. Facts should be stated distinctly and accurately, with a proper emphasis laid upon the principal circumstances. The proposition should be delivered with a clear and audible voice, and its divisions distinctly marked. The confirmation admits of a great variety, both of voice and gesture; and the reasoning ought to be accompanied with suitable actions. In confutation, the arguments of the opposite party should be stated plainly and distinctly, unless they appear unworthy of a serious answer; in which case they may be answered with humor, or exposed with ridicule. Tubero, having made it part of his charge against Ligarius that he was in Africa during the civil war between Cæsar and Pompey, Cicero, in his reply, said, 'Cæsar, my kinsman, Tubero has laid before you a new crime, and till this day unheard of, that Q. Ligarius was in Africa!' In a conclusion, both the voice and gesture should be brisk and sprightly, which may seem to arise from a sense of the speaker's opinion of the goodness of his cause, and that he has offered nothing but what is agreeable to reason and truth; as likewise from his assurance that the audience agree with him in the same sentiments. In every undertaking that requires care and thought persons are apt at first to be sedate and moderate, but when it is drawing to an end, and is nearly finished, it is very natural to appear more gay. If an enumeration of the principal arguments of the discourse be convenient, as it sometimes is, where they are pretty numerous, or the discourse is long, they ought to be expressed in the most clear and forcible manner.

Thus have we laid before our readers a brief but comprehensive view of the principles, rules, chief requisites, and practice of oratory. But, after all, it may be said of the orator as of a poet, 'nascitur non fit.' But the student of this science should consider his own genius. We seldom find that any actor can excel in all characters, but if he performs one well he is deficient in another; and therefore he commonly confines himself to such as best suit his powers. The case is the same with the orator, who should keep within those bounds which nature has prescribed. Every one should endeavour to know his own powers, and act in aid of them, as in most cases nature may be much assisted and improved by art.

ORATORY, a small closet or apartment near a bed-chamber, furnished for private devotions.

ORB, *n. s.*
ORBED, *adj.*
ORBICULAR,
ORBICULARLY, *adv.*
ORBICULATED, *adj.*
ORB'IT, *n. s.*
ORB'Y, *adj.*

Fr. and Ital. *orbe*;
Lat. *orbis*. A sphere;
globular or circular
body; hence the eye;
a wheel; circle; particularly a heavenly body
or light; circle or revolution of such a body; mundane circle; period;

evolution of time: orb'd and orbicular mean rounded, circular, or globular; as does the obsolete word orby: orbit is chiefly used for the line of a planet, path, or revolution; and by Young, improperly, as a diminutive of orb.

It smote Atreides' *orbis* target; but ranne not through the brasse. *Chapman.*

When now arraid
The world was with the spring; and *orbis* heures
Had gone the round againe, through herbs and
flowers. *Id.*

In the floor of heaven
There's not the smallest *orb* which thou beholdest,
But in his motion like an angel sings,
Still quiring to the young-eyed cherubims.

Shakespeare.

Will you again unknit
This churlish knot of all abhorred war,
And move in that obedient *orb* again,
Where you did give a fair and natural light? *Id.*

All those sayings will I overwear,
And all those swearings keep as true in soul,
As doth that *orb'd* continent the fire,
That severs day from night. *Id.*
Astronomers, to solve the phenomena, framed to
their conceit eccentricks and epicycles, and a won-
derful engine of *orbs*, though no such things were.

Bacon.

The *orbs*
Of his fierce chariot rolled as with the sound
Of torrent floods. *Milton's Paradise Lost.*
Self-begot, self-raised,
By our own quickening power, when fatal course
Had circled his full *orb*, the birth mature
Of this our native heaven. *Id.*

A drop serene hath quenched their *orbs*,
Or dim suffusion veiled. *Milton.*
Truth and justice then
Will down return to men,
Orbed in a rainbow, and like glories wearing. *Id.*

He shall monarchy with thee divide
Of all things, parted by the' empyreal bounds,
His quadrature from thy *orbicular* world. *Id.*
With smiling aspect you serenely move
In your fifth *orb*, and rule the realm of love.

Dryden.

They with a storm of darts to distance drive
The Trojan chief; who held at bay from far,
On his Vulcanian *orb* sustained the war. *Id.*
That fine part of our constitution, the eye, seems
as much the receptacle and seat of our passions, ap-
petites, and inclinations, as the mind itself. Love,
anger, pride, and avarice, all visibly move in those
little *orbs*.

Spectator.

A golden axle did the work uphold,
Gold was the beam, the wheels were *orb'd* with gold.

Addison.

The form of their bottom is not the same; for
whereas before it was of an *orbicular* make, they now
look as if they were pressed. *Id.*

By a circle I understand not here a perfect geomet-
rical circle, but an *orbicular* figure, whose length is
equal to its breadth, and which as to sense may
seem circular. *Newton.*

A mighty collection of water, inclosed in the
bowels of the earth, constitutes an huge *orb* in the
interior or central parts; upon the surface of which
orb of water the terrestrial strata are expanded.

Woodward's Natural History.

Suppose more suns in proper *orbits* rolled,
Dissolved the snows and chased the polar cold.

Blackmore.

Suppose the earth placed nearer to the sun, and
revolve for instance in the *orbit* of Mercury; there
the whole ocean would even boil with extremity of
heat, and be all exhaled into vapours; all plants and
animals would be scorched. *Bentley.*

Attend, and you discern it in the fair
Conduct and finger, or reclaim a hair;
Or roll the lucid *orbit* of an eye;
Or in full joy elaborate a sigh. *Young.*

Ancient dame, how wide and vast,
To a race like ours appears,
Rounded to an *orb* at last
All thy multitude of years! *Cowper*

Glorious *orb*! the idol
Of early nature and the vigorous race
Of undiseased mankind, the giant sons
Of the embrace of angels, with a sex
More beautiful than they, which did draw down
The erring spirits who can ne'er return. *Byron.*

ORB, in military tactics, is the position of a
number of men in the form of a hollow circle.
The celebrated marshal de Puysegur prefers this
position for a body of infantry in an open coun-
try to resist cavalry, or even a superior force of
infantry; because it is regular and equally
strong, and gives an enemy no reason to expect
better success by attacking one place than ano-
ther. Caesar drew his whole army in this form
when he fought against Labienus. The whole
army of the Gauls were formed into an orb,
under the command of Sabinus and Cotta, when
fighting against the Romans. This orb was
generally formed six deep.

ORBE, ORBEN, or URBACH, a neat built town of
West Switzerland, in the Pays de Vaud, on the
river Orbe, over which is a bridge. The most
remarkable objects of the place are a curious
hydraulic engine, and the botanical garden.
Population 2000: seven miles south-west of
Yverdun.

ORBELUS, a mountain chain of European
Turkey, to the westward of the great Hæmus
ridge, and rising to the greatest elevation to the
south of Sophia. Parts of this track contain
silver, copper, and iron ores, and the Turks
have here some valuable mines.

ORBIT, in astronomy, is the path of a planet
or comet, or the curve that it describes in its
revolution round its central body; thus the
earth's orbit is the curve which it describes in
its annual course round the sun. See ASTRO-
NOMY.

ORBITELLO, a town and fortress of Tus-
cany, in the province of Sienna, situated on a
kind of promontory projecting into a lake of
this name, about eighteen miles in circuit. It
has a good harbour, defended by several forts.
With the sea it communicates only by a narrow
inlet. It is chiefly remarkable for the size and
number of eels which are caught here (some of
them weighing from eight to ten lbs.), and which
are sent to Rome, Naples, and various large
towns. Eighty miles north-west of Rome, and
ninety south of Florence.

ORC, *n. s.* Lat. *orca*; Gr. *ὀρυς*. A sort of
sea-fish.

An island salt and bare,
The haunt of seals and orcs, and sea-mews' clang. *Milton.*

OR'CHARD, *n. s.* Saxon *ortgeard*, either
hortyard or wortyard, says Skinner. The Goth.
aurt, and Sax. *ort*, seem to correspond with the
Lat. *hortus*. A garden of fruit trees.

Planting of orchards is very profitable, as well as
pleasurable. *Bacon's Advice to Villiers.*

They overcome their riches, not by making
Baths, orchards, fish-pools. *Ben Jonson.*

His parsonage-house from an incommodious ruin he had rendered a fair and pleasant dwelling, with the conveniences of gardens and orchards. *Fell.*

Her private orchards walled on every side,
To lawless Sylvas all access denied. *Pope.*

Hence from the busy joy-resounding fields
In cheerful error let us tread the maze
Of Autumn unconfined, and taste revived
The breath of orchard big with bending fruit.

Thomson.

AN ORCHARD is a portion of garden ground appropriated to the growth of standard fruit-trees, or for furnishing a large supply of the most useful kinds of fruit. The trees are mostly apple, pear, plum, and cherry-trees; to render the orchard more complete, it may also contain quinces, medlars, mulberries, service-trees, filberts, Spanish nuts, barberries, walnuts, and chestnuts. The two last sorts, as well adapted for sheltering the others from high winds, should, Mr. Forsyth thinks, be planted in the boundaries of the orchard, a little closer than ordinary for that purpose. In providing trees too much care cannot be taken to admit of none but such as have good roots, fair clean stems, and proper heads; and at the same time attention should be paid that a proper assortment of the different sorts be procured for the supply of the table during the whole year. A few of the summer sorts are sufficient, but more of the autumn, and still a larger quantity of the winter kind will be necessary. Large orchards of apples are only met with in districts where cider-making is conducted upon a large scale. In some counties, as Kent, there are orchards wholly of cherries, or of cherries and filberts. In general, however, there ought to be a much larger proportion of apples than of any other fruit in orchards, as in proper situations they are very profitable, and always of fine appearance.

The extent of ground for an orchard must be proportioned, in some measure, to the extent of land, and the quantity of fruit required either for private use or for public supply; so that an orchard may be from half an acre to twenty or more in extent. With respect to the situation of an orchard, we may observe very thriving orchards both in low and high situations, on declivities and plains, in various aspects or exposures, provided the soil is good; but very low damp situations should be avoided as much as possible; for in very wet soils no fruit trees will prosper; but a moderately low situation, free from copious wet, may be more eligible than an elevated ground, as being less exposed to tempestuous winds. Yet a situation having a small declivity is very desirable, especially if its aspect incline towards the east, south-east, or south, which are more eligible than a west aspect; but a north aspect is the worst of all, unless compensated by the good quality of the soil. And, as for soil, any common field or pasture that produces good crops of corn, grass, or kitchen vegetables, is suitable for an orchard, which should be sheltered from the east, north, and westerly winds, by suitable plantations, where not naturally protected by hills or rising grounds: but such plantations, when they consist of forest-trees, should neither be too large nor too near

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the orchard; as, where that is the case, they prevent a free circulation of air. Mr. Forsyth advises, where the ground does not admit of such plantations, planting cross rows of fruit-trees, in the manner directed in gardens, as well as some of the largest growing trees, nearest the outsides exposed to those winds, two or three rows of which should be planted closer than ordinary, which would greatly shelter those in the interior parts of the orchard, and be of great service, in addition to the walnut and chestnut trees, as mentioned above. Orchards succeed well on a chalk bottom, or subsoil. On such a soil Mr. Forsyth has seen roots twelve feet deep, and the trees thrive well. Where the bottom is clay the roots should be cut-in once in four years, to prevent them from penetrating the clay, which would greatly injure the trees. Whatever the nature of the soil may be, it should have a good depth, as two or three feet.

The preparation of the ground for the reception of trees is by trenching; or, if for very considerable orchards, by deep ploughing; but trench digging, one or two spades, as the soil will admit, is the most eligible, either wholly or partially, in the places where the lines of trees are to stand, a space of six or eight feet wide, all the way in each row, especially if it be grass-ground, and intended to be kept in the sward; or, if any of the under crops are designed to be raised, the ground may be wholly trenched at first; in either case trench the ground in the usual way to the depth of the natural soil; and, if in grass, turn the sward clean to the bottom of each trench, which, when rotted, will prove an excellent manure. In planting orchards, however, on grass grounds, some only dig pits for each tree, capacious enough for the reception of the roots, loosening the bottom well, without the labor of digging any other part of the ground. The ground must be fenced securely against cattle, &c., either with a good ditch and hedge, or with a paling fence, as may be most convenient.

In bad shingly or gravelly soils Mr. Forsyth recommends that holes should be dug at least three feet deep, and filled up with good mould; if mixed up with rotten dung, rotten leaves, or other manure, the trees will in time amply repay the expense: the dung used for this purpose should be that from the melon and cucumber beds, mixed with the mould from the same, when the beds are broken up in autumn, or winter; and be laid up in heaps, and continued so for one year at least; but be frequently turned, and have some good fresh mould mixed with it.

The best season for planting all sorts of fruit trees is autumn, soon after the fall of the leaf, from about the end of October until December; or in open weather from October until March. Of apples and pears in particular, choose a much greater quantity of the autumnal and late kinds than of the early sorts; but most of all apples; for the summer fruit is of short duration, only proper for temporary service; but the later ripening kinds keep sound for some considerable time for autumnal use; and the later sorts, that ripen in October, continue in perfection for various uses all winter, and several sorts until the season

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of apples return. Having made choice of the proper sorts, and marked them, let them be taken up with the utmost care, so as to preserve all their roots as entire as possible; and, when taken up, prune off any broken or bruised parts of the roots, and just tip the ends of the principal roots, in general, with the knife on the under side, with a kind of slope outward. If the trees have been already headed, or so trained as to have branched out into regular shoots to form each a proper head, they must be planted with the heads entire, only retrenching or shortening any irregular or ill-placed shoot that takes an awkward direction, or grows across its neighbours, or such as may run considerably longer than the rest, &c. The arrangement of the trees must be in rows, each kind separate, at distances according to the growth of the different sorts; but for the larger growing kinds, such as apples, pears, plums, cherries, &c., they should stand from twenty-five to thirty feet every way asunder, or forty feet at most. Each species and its varieties should generally be in rows by themselves, the better to suit their respective modes of growth: though for variety there may be some rows of apples and pears arranged alternately, as also of plums and cherries; and towards the boundaries there may be ranges of lesser growth, as quinces, medlars, filberts, &c., and the outer row of all may be walnut-trees, and some chestnuts, set pretty close to defend the other trees from violent winds. According to the above distances proceed to stake out the ground for making the holes for the reception of the trees; which, if made to range every way, will have a very agreeable effect, and admit the currency of air and the sun's influence more effectually. In planting very extensive orchards some divide the ground into large squares of different dimensions, with intervals of fifty feet between; serving both as walks, and for admitting a greater currency of air; in different quarters planting different sorts of fruit, as apples in one, pears in another, and plums and cherries in another, &c., and thus it may be repeated to as many quarters for each species and its varieties as may be convenient. As to the mode of planting the trees, a wide hole must be dug for each, capacious enough to receive all the roots freely every way without touching the sides. When the holes are all ready proceed to planting, one tree in each hole, a person holding the stem erect, whilst another trims in the earth, previously breaking it small, and casting it in equally all about the roots, frequently shaking the tree to cause the mould to settle close about all the smaller roots and fibres, and so as to raise the tree gradually up, that the crown of the roots may be but two or three inches below the general surface; and, when the hole is filled up, tread it gently, first round the outside, then near the stem of the tree, forming the surface a little hollow; and then if on the top of all is laid some inverted turf to the width of the holes, forming it with a sort of circular bank, three or four inches high, it will support the tree, and guard the roots from drying winds and summer's drought; observing that each tree stand perfectly upright, and that they range exactly in their proper rows.

The *after management* consists principally in keeping the trees properly pruned and cut; as, where this is judiciously done, the trees will come into bearing sooner, and long continue in vigor. But with standard trees less culture is necessary than in other cases. No branch should ever be shortened unless for the figure of the tree, and then it should be taken off close at the separation. The more the range of branches shoot circularly, a little inclining upwards, the more equally will the sap be distributed, and the better the tree bear. The ranges of branches should not be too near each other, that the fruit and leaves may not be deprived of their full share of sun; and, where it suits, the middle of the tree should be so free from wood that no branch may cross another, but all their extremities point outwards. About October or November, or as soon as the fruit is removed, is the most proper season for this work.

Take off superfluous branches with a saw, and afterwards smooth the place with a knife; for it is essential that every branch that is to come off should be cut perfectly close and smooth. The wounded part may then be smeared over with composition. Such branches should always be taken off as come near to the ground, that have received any material injury, where the leaves are much curled, or that have a tendency to cross the tree, or run inwards: and attention may be given to the beauty of the head, leaving all the branches as nearly equidistant as possible. Where there are any remaining blotches they should be opened or scored with a knife; and where the bark is ragged, from any laceration, it should be pared gently down to the live wood: the moss should be rubbed clean off, and the trees scored. In this last operation care should be taken not to cut through the inner or white rind, which joins the bark to the wood. The young shoots, in spring, should be rubbed off, and not cut, as cutting is apt to increase the number. The great enemy of apple-orchards is misletoe, and it is often permitted to become very injurious. The usual method of clearing trees from it is to pull it out with hooks in frosty weather, when brittle. A laborer is capable of clearing fifty or sixty trees in a day. Other diseases to which orchard-trees are subject are the canker, gum, mildew, and blight, which are rather to be prevented by such culture as will induce a healthy state than to be remedied by topical applications. Too much lime, Sir H. Davy thinks, will bring on the canker, and if so, the replacing a part of such soil with alluvial or vegetable earth would be of service. The gum, it is said, may be constitutional, arising from offensive matter in the soil; or local, arising from external injury. In the former case, improve the soil; in the latter, apply the knife. The mildew, it is observed by T. A. Knight and Abercrombie, may be easily subdued at its appearance by scattering flour of sulphur upon the infected parts. As this disease is now generally considered the growth of parasitical fungi, the above remedy is likely to succeed. For the blight and caterpillars Forsyth recommends burning of rotten wood, weeds, potatoe haulm, wet straw, &c., on the windward side of the trees when they are in blossom. He

also recommends washing the stems and branches of all orchard trees with a mixture of fresh cowdung with urine and soap-suds, as a white-washer would wash the ceiling or walls of a room. The promised advantages are, destruction of insects and 'fine bark'; more especially, he adds, 'when you see it necessary to take all the outer bark off.'

Mr. Bucknell found it impossible to take off great branches of fruit-trees without leaving a stump, or improper wound: and, as it is essential that every branch be cut perfectly close and smooth, be used saws, and afterwards smoothed over the saw-cut with a knife, immediately applying his medicated tar to the wound. This tar is composed of half an ounce of corrosive sublimate, reduced to a fine powder, and put into a three-pint pipkin, with a glassful of spirits of hartshorn, and stirred well together till the sublimate is dissolved. The pipkin is then filled by degrees with common tar, and constantly stirred till the mixture is blended as intimately as possible. This composition has been found by Mr. Bucknell to answer the purposes of excluding the air, keeping off insects and vermin of every description, and of assisting the wound to heal.

'In heading down old decayed apple-trees, for the sake of symmetry,' says the author of the *Treatise on Fruit-trees*, 'it will be necessary to cut at the forked branches, as near as can be to the upper side of the fork, cutting them in a sloping manner to carry off the wet, at the same time rounding the edges. The orchardist may begin at the lower branches, cutting just above the lower bark, and, proceeding upwards, cut the rest of the branches to six joints or forks, according to their strength, till he have finished cutting in the whole head. If any of these branches should have the canker all the infected part must be cut out. When the tree is all prepared, the composition must be immediately applied, beginning at the top of the tree, and finishing with the powder of wood ashes and burnt bones in descending, which will save its being rubbed off during the operation, and the composition will prevent the sun and air from injuring the naked inner bark. A tree thus prepared will, in the course of three or four years, produce more and finer fruit than a maiden tree that has been planted upwards of twenty years.'

Mr. Marshall, in his *Rural Economy of Gloucestershire and Herefordshire*, observes that spring frosts are an enemy, against which, perhaps, it is most difficult to guard orchard trees. Dry frosts are observed to have no other effects than keeping the blossoms back; consequently are frequently serviceable to fruit-trees. But wet frosts, namely, frosts after rain or a foggy air, and before the trees have had time to dry, are very injurious even to the buds. An instance is mentioned in which a flying hazy shower in the evening was succeeded by a smart frost: that side of the trees against which the haze drove was entirely cut off; while the opposite side, which had escaped the moisture, likewise escaped the effect of the frost.

The Hereford Agriculture Report insists that the pear, although, in general, producing an inferior liquor, possesses many advantages for ge-

neral culture, when compared with the apple. It will flourish in a greater variety of soils, is more productive, and being incapable (in those sorts which are proper for perry) to be eaten or applied to any common culinary purpose, it is little subject to be stolen, even in situations where fruit does not abound. As an ornamental tree, it possesses sufficient merit to entitle it to a place where ornament is the principal object; its form is often picturesque, and it blossoms in the spring, and its fruit in autumn is always beautiful. Every tree, when nearly full grown, will afford, in moderately good ground, an annual produce of twenty gallons of liquor (taking many years together), even at the lowest calculation. Many single trees in Herefordshire have produced a hogshead in one season, and an extraordinary tree growing on the glebe land of the parish of Hom Lacy has more than once filled fifteen hogsheads in the same year; when the branches of this tree, in its original state, became long and heavy, their extreme ends successively fell to the ground, and, taking fresh root at the several points where they touched it, each branch became a new tree, and in its turn produced others in the same way. The produce of an acre planted with apple-trees will generally be found nearly one-third less than the same quantity of ground planted with pear-trees would afford, with the exception of the halmer pear, and oldfield; but the apple tree begins to bear at an earlier age, and cider will ever be justly preferred to the juice of the pear. As an object of sight, the pear-tree has every advantage over its rival; but Mr. A. Knight is of opinion that under the system now practising, to procure new varieties, the apple-tree may, in some degree at least, acquire the recommendation of ornament, as well as use: those crossed with the Siberian crab promise to be of this description.

Orchards, says Mr. Loudon, have doubtless existed in Britain for many ages as appendages to wealthy religious establishments; but as objects of farming, or field culture, they do not appear to have been adopted till about the beginning of the seventeenth century.'

'The most generally useful fruit that can be grown in farm orchards is the apple; next the pear; then the plum for tarts, or wine; and to these may be added the cherry, filbert, walnut, chestnut, and elder. In the cider countries where the climate is more certain than in some others, it is customary to plant but a few good sorts; and not to mix above one or two sorts together in making cider; in the northern districts, on the contrary, it is a maxim to plant a considerable number of different sorts, both of those which blossom early and late; because, should the blossoms of one variety be destroyed by a frosty wind, that of another may escape. In cold districts, it is advisable to plant orchards in sheltered hollows, exposed to the sun, and to plant thick; but in the warmer southern counties, many descriptions of cider and perry fruits may be grown to perfection in the hedge-rows, or as cultured trees in permanent pastures.'

We are indebted to this author for the following

The most approved sorts of cider pears, according to this writer, are the following :—

Barland, Pom. Her. t. 27, Forsyth, p. 143, fruit very austere, hardly upright tree. Holmore, Pom. Her. t. 20, Forsyth, p. 144, upright tree. Huffcap, Pom. Her. t. 24., Forsyth, p. 154, fruit austere, large, hardy trees. Oldfield, Pom. Her. t. 11, Forsyth, p. 144, large tree. Rough cap, Forsyth, p. 144, very austere, hardy free-growing tree. Squash teinton, Pom. Her. t. 13, Forsyth, p. 144, fruit very austere, upright tree and great bearer.

The baking and dessert pears fit for orchards, according to Nicol, are the following :—* Jargonelle, Crawford or lammas, * carnock or drummond, * gray achan, swan egg, * moorfowl egg * yair, * golden knap (good), Longueville, * summer bergamot, * autumn ditto, * Scot's ditto, musk robin (good), saffron, * hanging leaf (very good), the pound pear, cadillac, warden (for baking).

The best sorts of baking plums are, damson, bullace, muscle, winesour, and magnum bonum. Of these the damson is by far the best, and next the winesour, which thrives only on a calcareous soil, and grows wild in abundance in the West Riding of Yorkshire.

The following are excellent dessert plums for an orchard :—* Green-gage, Orleans, * damask (black, good), white perdigon, * blue ditto, blue gage, * white magnum bonum, red ditto or imperial, * drap d'or (yellow, good). Of these the green-gage, Orleans, and damask are much the best.

ORCHESTRA, *n. s.* Gr. *ὀρχήστρα*. The place occupied by musicians at a public entertainment.

ORCHESTRA, in the Grecian theatres, was that part of the proscenium or stage where the chorus used to dance. In that of Athens a kind of altar was erected in the *ὀρχήστρα*, called the *θυμιατήρ* (thymele among the Romans), which sometimes served to offer sacrifices on to Bacchus (whence the edifice was named the Theatre of Bacchus), and sometimes as a tribune from which orations were made by the magistrates and orators to the assembled people, it being customary for the Greeks often to hold public meetings in their theatres. It is probable that this altar, as well as the orchestra itself (of which it formed the centre) was sunk somewhat below the level of the proscenium (as in modern days), in order that the view of the performance on the stage might not be interrupted. The orchestra was semi-circular and surrounded with seats. In the Roman theatres it made no part of the scena, but answered pretty nearly to the pit in our play-houses, being taken up with seats for senators, magistrates, vestals, and other persons of distinction. The actors never went down into it.

ORCHIA Lex, instituted by Orchius the tribune of Rome, A. U. C. 566. Its intention was to limit the number of guests that were to be admitted at an entertainment; and it also enforced that during supper, which was the chief meal among the Romans, the doors of every house should be left open.

ORCHILLA, a small cluster of islands in the

West Indies, near South America. The largest is in the form of a crescent, and low, excepting on the east and west capes. Here the trees and verdure abound, whilst on the other sides the soil is barren. The only animals are goats and lizards; and it contains but little fresh water. On the south-west side the water is very deep, and the shore perpendicular, like a wall. The different islands are separated by narrow channels of difficult navigation. Long. 65° 20' W., lat. 12° N.

ORCHIS, in botany, a genus of the diandria order, and gynandria class of plants; natural order seventh, orchidæ. Its characters are these: it has a single stalk, with a vague sheath, and no empalement; the flower has five petals, three without and two within; the nectarium is of one leaf, fixed to the side of the receptacle, between the division of the petals; the upper lip is short and erect, the under large, broad, and spreading; the tube pendulous, corniform, or like a horn, and prominent behind; it has two short slender stamina, sitting upon the pointal, with oval erect summits, fixed to the upper lip of the nectarium; there is an oblong contorted germen, under the flower, with a short style, fastened to the upper lip of the nectarium; the germen afterwards turns to an oblong capsule, with one cell, having three keel-shaped valves, opening on the three sides, but jointed at top and bottom, filled with small seeds like dust. Miller enumerates ten, and Linneus thirty-three species. All those sorts of orchis described by Miller grow wild in several parts of England, but, on account of the extreme beauty of their flowers, deserve a place in every good garden; and the reason of their not being cultivated in gardens proceeds from the difficulty of transplanting them: though this may be easily overcome, where a person has an opportunity of marking their roots, in their time of flowering, and letting them remain until their leaves are decayed, when they may be transplanted with safety. But, if their soil and situation be adapted to their various sorts, they will thrive and continue several years, and during their season of flowering will afford as great varieties as any flowers which are at present cultivated. The most remarkable species are

O. mascula, with a root composed of two bulbs, crowned with oblong, broad, spotted leaves; upright stalks, a foot high; garnished with one or two narrow amplexicaule leaves; and terminated by a long spike of reddish purple flowers, having the petals reflexed backward; a quadrilobed crenated lip to the nectarium, and an obtuse horn. The flowers of this species possess a very agreeable odor. This species is the most valuable.

O. militaris has a double bulbous root, crowned with oblong amplexicaule leaves; erect flower-stalks, eight or ten inches high; terminated by a loose spike of ash-colored and reddish flowers, having confluent petals; a quinquefid, rough, spotted lip to the nectarium, and an obtuse horn. The structure of the flowers exhibits the figure of a naked man; and are often of different colors in the same flower, as ash-color, red, brown, and dark-striped.

O. morio, has a double bulbous root, crowned with oblong, ribbed, spreading leaves; erect flower-stalks, eight or ten inches high; garnished with a few amplexicaule leaves; and terminated by a short loose spike of flowers, having connivent petals, a quadrifid crenated lip to the nectarium, and an obtuse horn. All the species are very hardy perennials, with bulbous fleshy roots. The flowers appear in May, June, and July, but principally in June: their mode of flowering is universally in spikes, many flowers in each spike; and each flower is composed of five petals in two series, and a nectarium. This plant flourishes in various parts of Europe and Asia, and grows in our country spontaneously, in great abundance. It is assiduously cultivated in the east; and the root of it forms a considerable part of the diet of the inhabitants of Turkey, Persia, and Syria. From it is made the alimentary powder called salep; which, prepared from foreign roots, is sold at 5s. or 6s. per lb., though it might be furnished by ourselves at the sixth part of that price, if we would cultivate this plant. The orchis mascula is the most valued for this purpose. A dry, and not very fertile, soil is best adapted to its growth. The most fit time for gathering the roots is when the seed is formed, and the stalk is ready to fall; because the new bulb, of which the salep is made, is then arrived at its full maturity, and may be distinguished from the old one by a white bud rising from the top of it, which is the germ of the orchis of the succeeding year.

ORCUS, or Pluto, god of the infernal regions, so called from *ορχος*, a tomb or sepulchre, or from *ορκος* an oath by the river Styx. The ancients gave this name also to all the divinities of the infernal regions, even to Cerberus. This deity has also been confounded with Charon: he had a temple at Rome.

ORCUS, a river of Thessaly, which took its rise from the marshes of the Styx, and the waters of which were so thick that they floated like oil upon the surface of the river Peneus, into which they discharged themselves.

ORDAIN, *v. a.* } Fr. *ordonner*; Span. and
ORDAINER, *n. s.* } Port. *ordinar*; Ital. *ordinare*;
Lat. *ordino*. To fix; decree; appoint; settle;
institute; invest with office or power.

All signified unto you by a man who is *ordained*
over the affairs, shall be utterly destroyed. *Ester.*
As many as were *ordained* to eternal life believed.

He commanded us to testify that it is he which
was *ordained* of God to be the judge of quick and
dead. *Acts x. 42.*

Know the cause why musick was *ordained*;
Was it not to refresh the mind of man
After his studies, or his usual pain? *Shakespeare.*
Malmutius

Ordained our laws, whose use the sword of Caesar
Hath too much mangled. *Id. Cymbeline.*

God, from Sinai descending, will himself
In thunder, lightning, and loud trumpets sound,
Ordain them laws. *Milton's Paradise Lost.*

St. James was bishop of Jerusalem, and St. Peter,
James, and John, were his *ordainers*.

To souls oppressed and dumb with grief,
The Gods *ordain* this kind relief,
Jeremy Taylor.

That musick should in sounds convey
What dying lovers dare not say. *Wallor.*
Meletius was *ordained* by Arian bishops, and yet
his ordination was never questioned. *Stillington.*
The fatal test,

The scene of death, and place *ordained* for punish-
ment. *Lryden.*

Some laws *ordain*, and some attend the choice of
holy senates, and elect by voice. *Id.*

My reason bends to what thy eyes *ordain*;
For I was born to love, and thou to reign.

Sure 'tis the happy hour *ordained* above,
When vanquished vice shall tyrannize no more.

Ye sylphs of death, on demon pinions
Around the guillotine *ordained* for Pitt. *Canning.*

OR'DEAL, *n. s.* Sax. *orþal*; Goth. *ordil*;
Fr. *ordalie*; barb. Lat. *ordalium*. The prefix *or*
or *ur* has been traced to the Chald. *ur*, fire.
An ancient form of trial by fire; also by water:
see below.

Where so you list, by *ordal* or by othe,
By sorte or in what wise, so that you leste
For love of God, let prove it for the beste,
And if that I be gilty dome die. *Chaucer.*
Their *ordal* laws they used in doubtful cases,
when clear proofs wanted. *Hakewill on Providence.*
In the time of king John, the purgation per ignem
et aquam, or the trial by *ordal*, continued; but it
ended with this king. *Hale.*

ORDEAL was an ancient form of trial. See
TRIAL. It was an appeal to the immediate
interposition of divine power, and was peculiarly
distinguished by the appellation of *judicium*
Dei; and sometimes vulgaris purgatio, to dis-
tinguish it from the canonical purgation, which
was by the oath of the party. That the purga-
tion of *ordal*, of some one kind or other, is
very ancient, admits not of a doubt; and that
it was very universal in the times of super-
stitious barbarity is equally certain. It seems
even to have been known to the ancient Greeks.
And Grotius gives us many instances of water
ordal, in Bithynia, Sardinia, and other places.

There were two sorts of it more common than
the rest, in *Europe*, by fire, and by water. The
former was confined to persons of higher rank,
the latter to the common people. Both these
might be performed by deputy; but the prin-
cipal was to answer for the success of the trial,
the deputy only venturing some corporal pain,
for hire, or perhaps for friendship. The fire
ordal was performed either by taking up in
the hand, unhurt, a piece of red-hot iron, one,
two, or three pounds weight; or else by walk-
ing barefoot and blindfold over nine red-hot
plough-shares, laid lengthwise at unequal dis-
tances: and, if the party escaped being hurt, he
was adjudged innocent; but if it happened
otherwise, as without collusion it usually did, he
was then condemned as guilty. Water *ordal*
was performed, either by plunging the bare arm
up to the elbow in boiling water, and escaping
unhurt thereby, or by casting the person sus-
pected into a river or pond of cold water; and,
if he floated therein without any action of
swimming, it was deemed an evidence of his
guilt; but if he sunk he was acquitted. It is
easy to trace out the traditional relics of this
water *ordal*, in the ignorant barbarity still prac-

tised in many countries to discover witches, by casting them into a pool of water, and drowning them to prove their innocence. In the Eastern empire the fire ordeal was used for the same purpose, by the emperor Theodore Lascaris, who, attributing his sickness to magic, caused all those whom he suspected to handle the hot iron; thus joining (as has been well remarked) to the most dubious crime in the world the most dubious proof of innocence. Besides these methods of trials, there were some others common in Europe; as the judicial combat, the ordeal of the cross, and the ordeal of the corsned. The judicial combat was well suited to the genius and spirit of fierce and warlike nations, and was one of the most ancient and universal modes of trial. It was exceedingly common in Germany in very remote ages. It was also used in some countries on the continent at pretty early periods: it is not, however, mentioned in any of the Anglo-Saxon laws; and it does not appear to have been much used in England till after the Conquest. There are, however, two remarkable instances of it recorded in Dr. Henry's History of Great Britain, to which we shall refer the inquisitive reader. We need scarcely add, that this detestable form of trial was the foundation of the no less detestable crime of duelling, which disgraces our age and nation. See DUEL. It was so much the custom, in the middle ages of Christianity, to respect the cross even to superstition, that it would have been indeed wonderful if the same ignorant bigotry had not converted it into an ordeal: accordingly we find it used for this purpose, and in so many different ways as almost to preclude description. Dr. Henry gives the following account of it:—'In criminal trials, the judgment of the cross was commonly thus conducted. When the prisoner had declared his innocence upon oath, and appealed to the judgment of the cross, two sticks were prepared exactly like one another; the figure of the cross was cut on one of these sticks, and nothing on the other: each of them was then wrapped up in a quantity of fine white wool, and laid on the altar, or on the relics of the saints; after which a solemn prayer was put up to God, that he would be pleased to discover, by evident signs, whether the prisoner was innocent or guilty. These solemnities being finished, a priest approached the altar, and took up one of these sticks, which was uncovered with much anxiety. If it was the stick marked with the cross, the prisoner was pronounced innocent; if it was the other, he was declared guilty.' When the judgment of the cross was appealed to, in civil causes, the trial was conducted in this manner:—The judges, parties, and all concerned, being assembled in a church, each of the parties chose a priest, the youngest and stoutest that he could find, to be his representative in the trial. These representatives were then placed one on each side of some famous crucifix; and, at a signal given, they both at once stretched their arms at full length, so as to form a cross with their body. In this painful posture they continued to stand while divine service was performing; and the party whose representative dropped his arms first lost his

cause. These, and the like relics of superstition and barbarism, were abolished in England (as had been done in Denmark above a century before), by act of parliament 3 Hen. III. according to Sir Edward Coke, or rather by an order of the king in council.

We have, in Mr. Turner's well known History of the Anglo-Saxons, a full account of the ordeals in use among that people from the laws of Ina. 'The iron,' says Mr. Turner, 'was to be three pounds in weight for the threefold trial, and therefore probably one pound only for the more simple charge; and the accused was to have the option, whether he would prefer the water ordeal or the iron ordeal.'

No man was to go within the church after the fire was lighted by which the ordeal was to be heated, except the priest and the accused. The distance of nine feet was to be then measured out, from the stake, of the length of the foot of the accused. If the trial was to be by hot water, the water was heated till it boiled furiously; and the vessel that contained it was to be iron or copper, lead or clay.

If the charge was of the kind they called anfeald, or simple, the accused was to immerge his hand as far as the wrist in the water, to take out the stone; if the charge was of a threefold magnitude, he was to plunge his arm up to the elbow.

When the ordeal was ready, two men were to enter of each side, and to agree that the water was boiling furiously. Then an equal number of men were to enter from each side, and to stand along the church on both sides of the ordeal, all fasting. After this the priest was to sprinkle them with holy water, of which each was to taste; they were to kiss the gospels, and to be signed with the cross. All this time the fire was not to be mended any more; but the iron, if the ordeal was to be by hot iron, was to lie on the coals till the last collect was finished; and it was then to be placed on the staples which were to sustain it.

While the accused was snatching the stone out of the water, or carrying the hot iron for the space of nine feet, nothing was to be said but a prayer to the Deity to discover the truth. The hand was to be then bound up and sealed, and to be kept so for three days; after that time the seal and the bandage were removed, and the hand was to be examined, to see whether it was foul or clear.

From this plain account, the ordeal was not so terrible as it may at first sight appear; because, independently of the opportunity which the accused had, by going alone into the church, of making terms with the priest, and of the ease with which his dexterity could have substituted cold iron or stone for the heated substances, at the moment of the trial, and the impossibility of the detection, amid the previous forms of the holy water, the diminution of the fire, prayers on the occasion, and the distance of the few spectators; independently of these circumstances, the actual endurances of the ordeal admitted many chances of acquittal. It was not exacted that the hand should not be burnt, but that after the space of three days it should not ex-

hibit that appearance which would be called foul or guilty. As the iron was to be carried only for the space of nine of the feet of the accused, it would be hardly two seconds in his hand. The hand was not to be immediately inspected, but it was carefully kept from air, which would irritate the wound, and was left to the chances of a good constitution to be so far healed in three days, as to discover those appearances when inspected, which were allowed to be satisfactory. Besides there was, no doubt, much preparatory training, suggested by the more experienced, which would indurate the epidermis so much as to make it less sensible to the action of the hot substances which it was to hold.

Ordeals were forbidden on festivals and fast-days.

Of the single ordeal it was ordered, that if the persons had been accused of theft, and were found guilty by it, and did not know who would be their borh, they should be put into prison, and be treated as the laws had enjoined.

An accused mint-master was to undergo the ordeal of the hot iron.

The ordeal might be compounded for.

The law of Æthelstan added some directions as to the ordeal. Whoever appealed to it was to go three nights before to the priest who was to transact it, and should feed on bread and salt, water and herbs. He was to be present at the masses in the mean time, and make his offerings and receive the holy sacrament on the day of his going through the ordeal; and he should swear that with fole-right he was guiltless of the accusation before he went to the ordeal. If the trial was the hot water, he was to plunge his arm half way above the elbow on the rope. If the ordeal was the iron, three days were to pass before it was examined. They who attended were to have fasted, and not to exceed twelve in number of either side; or the ordeal was to be void unless they departed.

A thief found guilty by the ordeal was to be killed, unless his relations redeemed him by paying his were, and the value of the goods, and giving borh for his good behaviour.

The command of the ordeals must have thrown great power into the hands of the church; and, as in most cases they who appealed to them did so from choice, it is probable that whoever expressed this deference to the ecclesiastical order were rewarded for the compliment, as far as discretion and contrivance would permit.

ORDER, *n. s.*, *v. a.* & *v. n.*

OR'DERER, *n. s.*

OR'DERLESS, *adj.*

OR'DERLY, *adj.* & *adv.*

OR'DERLINESS, *n. s.*

OR'DERS.

rank; architectural mode or fashion; class; fraternity: hence proper state or standing; regular government; society of persons remarkable for particular honors or insignia; and, in the plural, hierarchical or clerical state: to order is, to regulate; manage; adjust; dispose; conduct; command; give command or direction: an orderer, one who regulates, commands, or methodises: orderless is, disorderly; without rule or order: orderly, methodically; observant of method; not

Fr. *ordre*; Lat.

ordo. Method;

arrangement; regulation; regular

process or mode;

rule; means; care;

tumultuous or clamorous; according to established rule: orderliness follows these senses.

The king commanded the high priest, and the priests of the second order, to bring forth out of the temple all the vessels. *2 Kings* xxiii. 4.

These were the orderings of them in their service, to come into the house of the Lord.

1 Chron. xxiv. 19.

To him that ordereth his conversation aright will I shew the salvation of God. *Psalms* l. 23.

The money promised unto the king he took no order for, albeit Sosthratus required it. *2 Mac.* iv.

It is walled with brick and stone, intermixed orderly. *Sandys.*

The kitchen clerk that hight digestion,

Did order all the cates in seemly wise. *Spenser.*

It were meet you should take some order for the soldiers, which are now first to be discharged and disposed of some way; which may otherwise grow to as great inconvenience as all this that you have quit us from. *Spenser on Ireland.*

The church hath authority to establish that for an order at one time, which at another time it may abolish, and in both do well. *Hooker.*

As for the orders established, sith the law of Nature, of God and man, do all favour that which is in being, till orderly judgment of decision be given against it, it is but justice to exact obedience of you. *Id.*

The book requirith due examination, and giveth liberty to object any crime against such as are to be ordered. *Whitgift.*

Then to their dams

Lets in their young; and wondrous orderly,

With manly haste, dispatch his housewifery. *Chapman.*

Provide me soldiers,

Whilst I take order for mine own affairs. *Shakespeare.*

Give order to my servants, that they take

No note of our being absent. *Id.*

Find a barefoot brother out,

One of our order, to associate me,

Here visiting the sick. *Id. Romeo and Juliet.*

All form is formless, order orderless,

Save what is opposite to England's love. *Shakespeare.*

Make it orderly and well,

According to the fashion of the time. *Id.*

Bias, being asked how a man should order his life, answered, as if a man should live long, or die quickly. *Bacon.*

Princes many times make themselves desires, and set their hearts upon toys; sometimes upon a building; sometimes upon erecting of an order. *Id.*

To know the true state of Solomon's house, I will keep this order; I will set forth the end of our foundation, the instruments for our works, the several employments assigned, and the ordinances we observe. *Id. New Atlantis.*

This order with her sorrow she accords,

Which orderless all form of order brake. *Daniel.*

Virgins must remember that the virginity of the body is only excellent in order to the purity of the soul; for, in the same degree that virgins live more spiritually than other persons, in the same degree is their virginity a more excellent state. *Taylor.*

But yet, supposing that Presbyters were included under the word Episcopos, yet it is not because the offices and orders are one, but because that the order of Presbyter is comprehended within the dignity of a bishop. *Jeremy Taylor.*

If the lords of the council issued out any *order* against them, or if the king sent a proclamation for their repair to their houses, presently some noblemen published a protestation against those *orders* and proclamations. *Clarendon.*

Balfour, by an *orderly* and well-governed march, passed in the king's quarters, without any considerable loss, to a place of safety. *Id.*

Th' Almighty seeing,
From his transcendent seat the saints among,
To those bright *orders* uttered thus his voice.

Milton.
So spake the universal Lord, and seemed
So *ordering*. *Id.*

How should those active particles, justified by the occusion of other bodies, whereof there is an infinite store, so *orderly* keep their cells without any alteration of site? *Glanville.*

As there is no church where there is no *order*, no ministry; so, where the same *order* and ministry is, there is the same church. *Pearson.*

When Christians became a distinct body, courts were set up by the *order* of the Apostles themselves, to minister judicial process. *Kettleworth.*

We should behave reverently towards the Divine Majesty, and justly towards men; and, in *order* to the better discharge of these duties, we should govern ourselves in the use of sensual delights with temperance. *Tillotson.*

She left immortal trophies of her fame,
And to the noblest *order* gave the name. *Dryden.*
If the faults of men in *orders* are only to be judged among themselves, they are all in some sort parties. *Id.*

As St. Paul was full of the doctrine of the gospel, so it lay all clear and in *order*, open to his view. *Locke.*

Any of the faculties wanting, or out of *order*, produce suitable defects in men's understandings. *Id.*

In the body, when the principal parts, the heart and liver, do their offices, and all the inferior smaller vessels act *orderly* and duly, there arises a sweet enjoyment upon the whole, which we call health. *South's Sermons.*

Kings are the fathers of their country; but, unless they keep their own estates, they are such fathers as the sons maintain, which is against the *order* of Nature. *Davenant.*

By shining marks, distinguished they appear,
And various *orders* various ensigns bear. *Granville.*

Having in his youth made a good progress in learning, that he might dedicate himself more entirely to religion, he entered into holy *orders*, and in a few years became renowned for his sanctity of life. *Addison's Spectator.*

Like use you make of the equivocal word dignity, which is of *order*, or office, or dominion, or nature; and you artificially blend and confound all together. *Waterland.*

What we see is in *order* only to what we do not see; and both these states must be joined together. *Asterbury.*

A clergy, reformed from popery in such a manner as happily to preserve the mean between the two extremes, in doctrine, worship, and government, perfected this reformation by quiet and *orderly* methods, free from those confusions and tumults that elsewhere attended it. *Id.*

When Ouranus first entered into holy *orders*, he had haughtiness in his temper, a great contempt and disregard for all foolish and unreasonable people; but he has prayed away this spirit. *Law.*

One man pursues power in *order* to wealth, and another wealth in *order* to power, which last is the safer way, and generally followed. *Swift.*

The moderator, when either of the disputants breaks the rules, may interpose to keep them to *order*. *Watts.*

In a colonade, or range of pillars, the intercolumniation or space between columns in the Tuscan *order* is four diameters; in the Doric *order* two and three-quarters; in the Ionic *order* two and a quarter; in the Corinthian *order* two; and in the Composite *order* one and a half. *Builder's Dictionary.*

I have received an *order* under your hand for a thousand pounds in words at length. *Tatler.*

Thine *orders*, mighty Sultan, are performed, and all Irene now is breathless clay. *Johnson's Irene.*

With sparkling gems bedecked it round:

With gems, that, ranged in *order* due,
Present the fair one's name to view. *Sheridan.*

Pray, Snee, won't you go to Drury-Lane theatre the first night of Puff's tragedy?

SNEER. Yes; but I suppose one shan't be able to get in; for on the first night of a new piece they always fill the house with *orders* to support it. *Id.*

We'll add a title—
"Count Arnold:" it hath no ungracious sound,
And will look well upon a billet-doux.

ARNOLD. Or in an *order* for a battle-field. *Byron.*

ORDER, in architecture. See ARCHITECTURE.

ORDER is also the title of certain ancient books, containing the divine office, with the *order* and manner of its performance. The Roman *order* is that wherein are laid down the ceremonies which obtain in the Romish church. See RITUAL.

ORDERS, in a military sense, all that is lawfully commanded by superior officers. Orders are given out every day, whether in camp, garrison, or on a march, by the commanding officer; which orders are afterwards given to every officer in writing by their respective sergeants.

ORDERS, HOLY, or ORDERS by way of eminence, denote a character peculiar to ecclesiastics, whereby they are set apart for the ministry. See ORDINATION. This the Roman Catholics make their sixth sacrament. In no reformed church are there more than three orders; viz. bishops, priests, and deacons. In the Roman church there are seven, exclusive of the episcopate; all which the council of Trent enjoins to be received and believed, on pain of anathema. They are distinguished into petty or secular orders, and major or sacred orders. *Orders*, *petty*, or *minor*, are four: viz. those of door-keeper, exorcist, reader, and alcolthy. Those in petty orders may marry without a dispensation; in effect, the petty orders are looked on as little other than formalities, and as degrees necessary to arrive at the higher orders. Yet the council of Trent is very serious about them; enjoins that none be admitted into them without understanding Latin; and recommends it to the bishops to observe the intervals of conferring them, that the persons may have a sufficient time to exercise the function of each order; but it leaves the bishops a power of dispensing with these rules; so that the four orders are usually conferred the same day, and only make the first part of the ceremony of ordination. The Greeks disavow these petty orders, and pass immediately to the subdiaconate; and the reformed to the diaconate. Their first rise Fleury dates in the time of the emperor Justinian. There is no call nor benefice required for the four petty

orders; and even a bastard may enjoy them without any dispensation; nor does a second marriage disqualify. *Orders, sacred, or major*, are three; viz. those of deacon, priest, and bishop. The council of Trent forbids any person being admitted to the major orders, unless he be in peaceable possession of a benefice sufficient for a decent subsistence; allowing no ordinations on patrimonies or pensions, except where the bishop judges it for the service of the church. A person is said to be promoted to orders per saltum, when he has not before passed the inferior orders. The council of Constantinople forbids any bishop being ordained without passing all the degrees; yet church history records instances of bishops consecrated without having passed the order of priesthood; and Panormas thinks such an ordination valid.

ORDINABLE, *adj.* } Fr. *ordinal*; Lat. *or-*
ORDINAL, *adj.* & *n. s.* } *dinale, ordino*. Such
ORDINANCE, *n. s.* } as may be appointed:
ordinal is marking or denoting order; thus first, second, and third, are ordinal numbers: also, as a noun substantive, a ritual of devotions; a book containing orders: ordinance is, rule; law; that which is ordained, commanded, or appointed: used by Shakspeare for cannon. See ORDINANCE.

I have no woman sufficient certain
The chambers to arrange in ordinance
After my lust. *Chaucer.*
It seemeth hard to plant any sound ordinance, or
reduce them to a civil government; since all their ill
customs are permitted unto them. *Spenser.*

Let Richard and Elizabeth,
The true successors of each royal house,
By God's fair ordinances conjoin together!
Shakspeare.

Caves and womby vaultages of France,
Shall chide your trespass and return your mock,
In second accent to his ordinance. *Id.*

There are seven Egyptian masters from whose
slavery Christ hath delivered us. Sin, an accusing
conscience, danger of God's wrath, tyranny of Satan,
the curse of the law, Mosalcal ceremonies, and hu-
man ordinances. *Bp. Hall.*

All the ways of oeconomy God hath used toward
a rational creature, to reduce mankind to that course
of living which is most perfectly agreeable to our na-
ture, and by the mercy of God *ordinable* to eternal
bliss. *Hammond.*

The moon's age is thus found: add to the epact
the day of the month, and the ordinal number of that
month, from March inclusive, because the epact be-
gins at March, and the sum of those, casting away
thirty or twenty-nine, as often as it ariseth, is the
age of the moon. *Helder.*

One ordinance ought not to exclude the other,
much less to disparage the other, and least of all to
undervalue that which is the most eminent. *Taylor.*

AN ORDINANCE is a statute or command of a
sovereign or superior; thus the acts of parlia-
ment are sometimes termed ordinances of parlia-
ment, as in the parliament rolls. Though in
some cases we find a difference made between
the two; ordinances being only temporary
things, by way of prohibition; and capable of
being altered by the commons alone; whereas
an act is a perpetual law, and cannot be altered
but by king, lords, and commons. Coke asserts

that an ordinance of parliament differs from an
act, as the latter can only be made by the king,
and the threefold consent of the estates; whereas
the former may be made by one or two of them.

ORDINARY, *adj.* & *n. s.* } Fr. *ordinaire*;
ORDINARILY, *adv.* } Ital. Span. and
Port. *ordinario*; Lat. *ordinarius*. Established;
regular; methodical; usual; common; mean;
ugly: as a noun substantive, established state;
actual and usual office; established judge; par-
ticularly, in this country, an established judge
in the ecclesiastical law; regular price of a meal;
a place of taking meals at a price: ordinarily is
according to established rule or method; com-
monly; of course.

The evil will
Of all their parishioners they had constrained,
Who to the ordinary of them complained.

If fault be in these things any where justly found,
law hath referred the whole disposition and redress
thereof to the ordinary of the place. *Hooker.*

Men of common capacity, and but ordinary judg-
ment, are not able to discern what things are fittest
for each kind and state of regiment. *Id.*

We are not to look that the church should change
her publick laws and ordinances, made according to
that which is judged *ordinarily* and commonly fittest
for the whole, although it chance that for some par-
ticular men the same be found inconvenient. *Id.*

Yet did she only utter her doubt to her daughters,
thinking, since the worst was past, she would attend
a further occasion, lest overmuch haste might seem
to proceed of the ordinary mislike between sisters in
law. *Sidney.*

Our courteous Antony,
Being barbered ten times o'er, goes to the feast;
And for his ordinary pays his heart
For what his eyes eat only. *Shakspeare.*

Spain had no other wars save those which were
grown into an ordinary; now they have coupled
therewith the extraordinary of the Valteline and
Palatinate. *Bacon.*

Villiers had an intimation of the king's pleasure to
be his cupbearer at large; and the summer following
he was admitted in ordinary. *Wotton.*

He at last accepted, and was soon after made
chaplain in ordinary to his majesty. *Fell.*

Here is plainly the eminency of an Episcopal
chair, and Jerusalem the seat of St. James, and the
clergy his own, of a college of which he was the
prepositus *ordinarius*; he was their ordinary. *Jeremy Taylor.*

The instances of human ignorance were not only
clear ones, but such as are not so *ordinarily* sus-
pected. *Glanville.*

It is sufficient that Moses have the ordinary credit
of an historian given him. *Tillotson.*

There is nothing more ordinary than children's re-
ceiving into their minds propositions from their pa-
rents; which, being fastened by degrees, are at last,
whether true or false, rivetted there. *Locke.*

Prayer ought to be more than *ordinarily* fervent
and vigorous before the sacrament. *South.*

Nothing is so modish as an agreeable negligence.
In a word, good-breeding shows itself most, where
to an ordinary eye it appears the least. *Addison.*

Though in arbitrary governments there may be a
body of laws observed in the ordinary forms of ju-
stice, they are not sufficient to secure any rights to
the people; because they may be dispensed with. *Id. Freeholder.*

Through the want of a sincere intention of pleas-
ing God in all our actions, we fall into such irregu-

larities of life, as by the *ordinary* means of grace we should have power to avoid.

Law.

The standing *ordinary* means of conviction failing to influence them, it is not to be expected that any extraordinary means should be able to do it.

Atterbury.

Springs and rivers do not derive the water which they *ordinarily* refund, from rain.

Woodward.

You will wonder how such an *ordinary* fellow as Wood could get his majesty's broad seal.

Swift.

They reckon all their errors for accomplishments: and all the odd words they have picked up in a coffee-house, or a gaming *ordinary*, are produced as flowers of style.

Swift.

ORDINARY, in common or canon law, denotes one who has ordinary or immediate jurisdiction in matters ecclesiastical in any place. In this sense archdeacons are ordinaries, but the appellation is most frequently applied to the bishop of the diocese, who has of course the ordinary ecclesiastical jurisdiction, and the collation to benefices within such diocese. There are some chapels, chapters, abbeys, &c., exempted from the jurisdiction of the ordinary. The archbishop is ordinary of the whole province, to visit, and receive appeals from the inferior judicatures. The Romish writers on canon law call the pope, by way of eminence, ordinary of ordinaries, since by the Lateran council he has taken the right of collating, by probation, to all benefices, in exclusion of the common collators.

ORDINARY, in naval language, denotes the establishment of persons employed by government to take charge of the ships of war, which are laid up in the several harbours adjacent to the royal dock-yards. These are principally composed of the warrant officers of the said ships, as the gunner, boatswain, carpenter, deputy purser, and cook, and three servants. There is besides a crew of laborers enrolled in the list of the ordinary, who pass from ship to ship occasionally, to pump, moor, remove, or clean them, whenever it is necessary. The term *ordinary* is also applied to the ships themselves: it is likewise used to distinguish the inferior sailors from the most expert and diligent. The latter are rated able on the navy books, and have £1. 4s. per month; whereas those who are rated *ordinary* have only 19s. per month.

ORDINARY OF NEWGATE is one who is attendant in ordinary upon the condemned malefactors in that prison, to prepare them for death.

ORDINATE, *v. a. & adj.* } Lat. *ordinatus*.

ORDINATION, *n. s.* }

To appoint: regular; methodical; appointed: ordination, established order or method; act of investing with office or authority, particularly ecclesiastical office.

There, as a wedded man in his estat,

Liveth a life blissful and *ordinat*,

Under the yoke of marriage ybound

Wel maye his herte injoye and blisse abounde.

Chaucer.

Finding how the certain right did stand,

With full consent this man did *ordinate*

The hair apparent to the crown and land.

Daniel.

Now they, in their *ordaining* assistant ministers, did not in every *ordination* give a distinct order as the church hath done since the apostles.

Jeremy Taylor.

Virtue and vice have a natural *ordination* to the happiness and misery of life respectively.

Norris.

Though ordained by Arian bishops, his *ordination* was never questioned.

Stillingfleet.

Ordinate figures are such as have all their sides and all their angles equal.

Ray on the Creation.

St. Paul looks upon Titus as advanced to the dignity of a prime ruler of the church, and entrusted with a large diocese under the immediate government of their respective elders; and those deriving authority from his *ordination*.

South.

ORDINATES, in geometry and conics, are lines drawn from any point of the circumference of an ellipsis, or other conic section, perpendicularly across the axis, to the other side. See **CONIC SECTIONS**.

ORDINATION is the act of initiating a person into the priesthood, by prayer and the laying on of hands. In episcopal churches it has always been esteemed the principal prerogative of bishops, and they still retain the function as a mark of spiritual sovereignty in their dioceses. Without ordination, no person can receive any benefice, parsonage, vicarage, &c. A person must be twenty-three years of age, or near it, before he can be ordained deacon, or have any share in the ministry; and full twenty-four before he can be ordained priest, and thus be permitted to administer the holy communion. A bishop, on the ordination of clergymen, is to examine them in the presence of the ministers, who, in the ordination of priests, but not of deacons, assist him at the imposition of hands; but this is only done as a mark of assent. In case any crime, as drunkenness, perjury, forgery, &c., be alleged against any one that is to be ordained, either priest or deacon, the bishop ought to desist from ordaining him. The person to be ordained is to bring a testimonial of his life and doctrine to the bishop, and to give an account of his faith in Latin; and both priests and deacons are obliged to subscribe to the thirty-nine articles. The ordination of bishops is more properly and more commonly called consecration. In the ancient discipline there was no such thing as a vague and absolute ordination; but every one was to have a church, whereof he was to be ordained clerk or priest. In the twelfth century they grew more remiss, and ordained without any title or benefice. The council of Trent restored the ancient discipline, and appointed that none should be ordained but those who were provided of a benefice sufficient to subsist them. The council of Rome, in 744, orders that no ordinations shall be held except on the first, fourth, seventh, and tenth months. In England, by can. 31, ordination days are the four Sundays immediately following the Ember weeks: being the second Sunday in Lent, Trinity Sunday, and the Sundays following the first Wednesday after September 14th, and December 13th. These are the stated times; but ordinations may take place at any other time, according to the discretion of the bishop, or circumstances of the case. Pope Alexander II. condemns ordination per saltum, as they call it; i. e. the leaping to a superior order without passing through the inferior. In the establishment of Scotland, where there are no bishops, the power of ordi-

nation is lodged in the presbytery, and by the Independents in the suffrage of the people.

ORD'NANCE, n. s. A contraction of ordinance, or from *Fr. ordonnance*. Great guns; cannon.

Have I not heard great *ordnance* in the field?
And heaven's artillery thunder in the skies?

Shakespeare.

When a ship seels or rouls in foul weather, the breaking loose of *ordnance* is a thing very dangerous.

Raleigh.

Men have devised to imitate these instruments of death, and send forth deadly bullets out of a cloud of smoke, wherein yet, as there is much danger, so much uncertainty; but this God, that discharges his *ordnance* from heaven, directs every shot to a head, and can kill as easily as shoot.

Bp. Hall.

There are examples of wounded persons that have roared for anguish and torment at the discharge of *ordnance*, though at a very great distance. *Bentley.*

ORDNANCE BILLS, or ORDNANCE DEBENTURES, are bills issued by the board of ordnance on the treasurer of that office, for the payment of stores, &c. These are not payable at any certain time, and do not bear any interest, so that the discount upon them is often very high; but they are seldom much above two years in arrear.

ORDNANCE, OFFICE, or BOARD OF, an office kept within the tower of London, which superintends and disposes of all the arms, instruments, and utensils of war, both by sea and land, in all the magazines, garrisons, and forts in Great Britain. In ancient times, before the invention of guns, this office was supplied by officers under the following titles: the bowyer, the cross bowyer, the galeator or purveyor of helmets, the armourer, and the keeper of the tents; and in this state it continued till Henry VIII. placed it under the management of a master, a lieutenant, surveyor, &c. &c. Some improvements have been since made; and this very important branch is now under the direction of the master-general of the ordnance, having under him a lieutenant-general, a surveyor-general, a clerk, a storekeeper, a clerk of the deliveries, and a treasurer, with a very great number of inferior officers, employed in the Tower of London, at Woolwich, and in almost all the forts, garrisons, and principal ports in his majesty's dominions. The office of ordnance is divided into two distinct branches, the civil and the military; the latter being subordinate to, and under the authority of the former.

Master-general of the Ordinance is deemed the principal officer in the civil branch of the ordnance; yet he is always chosen from amongst the first generals in his majesty's service. His trust is very great, as in him is vested the sole power of storing all the military magazines in the king's dominions with proper munitions of war, and likewise to supply the royal navy with what they may need in his department; the parliament granting money for this purpose. He is colonel in chief of the royal regiment of artillery, and he is invested with a peculiar jurisdiction over all his majesty's engineers employed in the several fortifications in his majesty's dominions: to him they are all accountable for their proceedings, and from him they receive their particular orders and instructions, according to the directions and commands given by his majesty in council.

In enquiring for the details of the modern state and arrangements of this part of the public service, we find much has been effected in the way of retrenchment and reform from the time of lord Mulgrave to that of the duke of Wellington, and particularly under the auspices of the latter: but that the recent recommendations of the finance committee are likely to result in still more important alterations.

ORDOVICES, an ancient nation of Britons, occupying that country which is now called North Wales, and containing the counties of Montgomery, Merioneth, Caernarvon, Denbigh, and Flint. These Ordovices, or (as they are called by Tacitus) Ordeuices, are supposed to have been originally of the same tribe or nation with the Huicii of Warwickshire, who were under subjection to the Cornavii; but the Huicii of North Wales, being a free independent people, were called Ordh Huici, or the free Huicii. When invaded by the Romans they showed a courage worthy of their name, and fought with great bravery in defence of their freedom and independence. Though routed by the Roman general Ostorius, in conjunction with the Silures, they maintained the war for a considerable time, until at length they were subdued with great slaughter by the renowned Agricola. It was probably owing to the nature of the country, and to the vicinity of Diva, now Chester, where a whole legion was quartered, that the Romans had so few towns or stations in the territories of the Ordovices. Medialonum, mentioned by Ptolemy, was the capital of the nation, and was probably situated at Maywood, in Montgomeryshire. It was a place of some consideration in the Roman times, but was afterwards demolished by Edwin, king of Northumberland. Besides this, the Romans had a few other towns in this country; as Segontium, now Caernarvon; Conovium, now Conway; and Varræ, now Bodvay; which are all mentioned in the eleventh journey of Antoninus. The country of the Ordovices was comprehended in the Roman province, called Britannia Secunda.

ORDUNA, a town in the province of Biscay, Spain, situated in a pleasant valley, surrounded by lofty mountains. It is the chief place of a district, called the Four Towns, and here is one of the chief custom-houses for the examination of merchandise coming by land from France. Inhabitants 4000. Fifty-seven miles W.S.W. of St. Sebastian, and fifty-seven N.N.E. of Burgos.

ORDURE, n. s. *Fr. ord, ordure; Ital. ordura; Teut. ord, schord; from Lat. sordes.*—Skinner. Dung; excrement; filth.

Gardeners with *ordure* hide those roots
That shall first spring and be most delicate.

Shakespeare.

Working upon human *ordure*, and by long preparation rendering it odoriferous, he terms it *zibetta occidentalis*.

Browne.

We added fat pollutions of our own,
To increase the steaming *ordures* of the stage.

Dryden.

Renewed by *ordure's* sympathetic force,
As oiled with magic juices for the course,
Vigorous he rises.

Pope.

ORE, *n. s.* Sax. *one*, *ona*; Belg. *oor*; Teut. *oer*. Unrefined metal; metal as it comes from the mine; metal in any state.

Round about him lay, on every side,
Great heaps of gold that never would be spent;
Of which some were rude *ore*, not purified,
Of Mulciber's devouring element. *Spenser*.
They would have brought them the gold *ore*
aboard their ships. *Raleigh's Apology*.

A hill not far,
Shone with glossy scurf, undoubted sign
That in his womb was hid metallic *ore*,
The work of sulphur. *Milton's Paradise Lost*.
The liquid *ore* he drained,
First his own tools; then what might else be wrought,
Fusile, or graven in metal. *Id.*

Who have laboured more
To search the treasures of the Roman store,
Or dig in Grecian mines for purer *ore*? *Roscommon*.

Quick-silver *ore* of this mine is the richest of all
ores I have yet seen; for ordinarily it contains in it
half quick-silver, and, in two parts of *ore*, one part
of quick-silver, and sometimes, in three parts of *ore*,
two parts of quick-silver. *Browne*.

Those who unripe veins in mines explore,
On the rich bed again the warm turf lay,
Till time digests the yet imperfect *ore*,
And know it will be gold another day. *Dryden*.
Those profounder regions they explore,
Where metals ripen in vast cakes of *ore*. *Garth*.
That head, with greater than magnetic power,
Caught it as Danae caught the golden shower;
And, though the thickening dross will scarce refine,
Augments its *ore*, and is itself a mine. *Byron*.

ORE, in natural history, the compound mineral, gleebe, earth, stone, or other substance, which is sufficiently rich in metallic particles to be worth purification, and separation of the metal from it, whether gold, silver, copper, &c. See **CHEMISTRY**, **METALLURGY**, and **MINERALOGY**, also the various metals in their order.

OREADES, in ancient mythology, nymphs of the mountains, daughters of Jupiter, or, as others say, of Phoroneus and Hecate. They attended Diana in hunting. See **NYMPH**.

OREBRO, a district of Middle Sweden, comprising the former province of Nerike, the west part of Westmanland, and a part of Warmeland. Its area is 1780 square miles; population about 100,000. The province is fertile in corn; and abounds more in mines and pasturage. The chief town is also Orebro.

OREBRO, an old neatly built town of Sweden, in the province of Nerike, on the river Svartelf, about two miles from the lake Hjelmars. Its manufactures have almost disappeared. Yet its inhabitants (about 4000) carry on an active trade with Stockholm, by the lake, the canal of Arboga, and the lake Mælar. It has wide streets, paved with round pieces of granite; and the principal church contains the monument of Engelhart.

OREL, an extensive and fertile government of European Russia, to the south of those of Tula and Kaluga, extending from 32° 50' to 39° of E. long. and from 52° to 54° of N. lat. Its area is 16,000 square miles. Its climate is temperate, and it is thought one of the best corn countries in Russia. Its pastures also are good, and rear a number of horses. The sheep produce a sufficient quantity of wool for consump-

tion, but little for export; the rearing of bees and honey and wax, form objects of considerable importance. As yet manufactures have made little progress. The trade is of more consequence, an official return having declared the mercantile capital to be £2,000,000. The exports consist of the products of agriculture, and the forests of some iron mines, and finally, of lime and alabaster quarries. The government is divided into twelve circles. Population 1,000,000.

ORELLANA (Francis), the first European who discovered the river of the Amazons. In 1539 he embarked near Quito, upon the river Coca, which farther down takes the name of Napo. From this he fell into another larger river; and, leaving himself entirely to the direction of the current, he arrived at Cape North, on the coast of Guiana, after sailing nearly 1800 leagues. Orellana perished ten years after, with three vessels which had been entrusted to him in Spain, without being able to find again the mouth of this river. In sailing down the river, he met with some armed women, against whom an Indian cacique told him to be on his guard; and he thence named it the River of the Amazons.

ORENBOURG, the most westerly government of Asiatic Russia, having on one side the government of Tobolsk, and on the other Russia in Europe. To the south, and in a great measure to the east, it borders on Independent Tartary. This is one of the most mountainous regions in the empire, comprehending the most elevated part of the great chain of the Urals. Yet it yields grain sufficient to become an object of exportation, and maintains vast flocks and herds. Even the camel is bred here for the purposes of the trade with Interior Asia. Bees are also a very profitable object of attention. A great quantity of large fish and caviar, taken in the Oural, are exported. Its mountains are equally a source of wealth, being filled with rich mines of copper and iron; it contains sal-gem and saline lakes. It is divided into twelve districts, the principal being Orenbourg Proper, and Oufa, the last of which contains the capital. On the Tartar frontier Orenbourg is exposed to the incursions of the Kirghise and Kalmouk hordes, for defence against which there have been erected a chain of frontier forts. Population 629,426.

ORENBOURG, a town in the government of the same name, of which it was the capital till 1702, when the seat of government was transferred to Oufa. It is of an oval form, in a vast plain, and regularly fortified. The streets are straight, and well built; it has nine churches, and was originally built higher up the Oural, but in 1739 was transferred 120 miles lower, and in 1742 fifty miles more. It is chiefly supported by the trade with Tartary and Bukharia. Through this channel are exported cloths of a red or scarlet color, velvets, Russia leather, linens, blue and white, copper and iron utensils, sugar and other colonial produce, glass, toys, &c. From Tartary the caravans bring India muslins and cottons, Persian silks, cotton-wool, gold dust, lapis lazuli, and a few precious stones; also skins, wool, and hair. The Kalmouks and the Kirghises bring to the market of Orenbourg from 40,000 to 60,000

sheep, and 10,000 horses. The last are transported into Russia, and the sheep chiefly employed in the production of tallow, which is sent to Petersburg. A pretty considerable branch of trade consists in the sale of golden eagles, which are highly valued by the Kirghises. Long. 52° 31' 10" E., lat. 51° 46' N.

ORESTES, in fabulous history, the son of Agamemnon and Clytemnestra. When his father was cruelly murdered by Clytemnestra and Ægisthus, young Orestes was saved from his mother's dagger by his sister Electra, called by Homer Laodicea, who privately conveyed him to the house of Strophius, king of Phocis, who had married a sister of Agamemnon. He was tenderly treated by Strophius, who educated him with his son Pylades. The two young princes soon contracted a most inviolable friendship. When Orestes came of age he visited Mycenæ, and avenged his father's death, by killing his mother Clytemnestra and her adulterer Ægisthus. After this he was acknowledged king of Mycenæ; but, being tormented by the Furies for having slain his mother, he exiled himself to Argos, where Apollo purified him, and he was acquitted by the unanimous decision of the Areopagites, whom Minerva herself instituted on this occasion, according to the poet Æschylus. Pausanias says, Orestes was purified of the murder at Trozene, where still was seen a large stone at the entrance of Diana's temple, upon which the ceremonies of purification had been performed. There was also at Megalopolis, in Arcadia, a temple dedicated to the furies, near which Orestes bit off one of his fingers with his teeth, in his insanity. But Euripides says that Orestes, after the murder of his mother, consulted the oracle of Apollo at Delphi, where he was told that nothing could deliver him from the furies, if he did not bring into Greece Diana's statue, from the Taurica Chersonesus, which, as was believed, had fallen down from heaven. Thoas, king of Chersonesus, always sacrificed to the goddess all who entered his country. Orestes and his friend were therefore both doomed to be sacrificed. Iphigenia, the sister of Orestes, was then priestess of Diana's temple, and it was her office to immolate these strangers. The intelligence that they were Grecians delayed the preparations, and Iphigenia was anxious to learn something about her native country. She interested herself in their misfortunes, and offered to spare the life of one of them, provided he would convey letters to Greece. This was a difficult trial; never was friendship more truly displayed.

*Iræ jubet Pylades carum moriture Orestem;
Hic negat; inque vicem pugnat uterque mori.*

At last Pylades yielded to the intreaties of his friend, and consented to carry the letters to Greece. These were addressed to Orestes himself, and led to a discovery of the connexion of the priestess with the man whom she was going to immolate. Iphigenia, when the cause of their journey had been explained, resolved to fly from Chersonesus with them, and to carry away the statue of Diana. Their flight was discovered, and Thoas prepared to pursue them; but Mi-

nerva interfered, and told him that all had been done by the will of the gods. Orestes came to Cappadocia from Chersonesus, and left there the statue of Diana at Comana. After this Orestes reigned at Argos; married Hermione the daughter of Menelaus, and gave his sister to his friend Pylades. Hermione had been promised to Orestes, but Menelaus had married her to Neoptolemus the son of Achilles, who had exerted himself so much in his cause during the Trojan war. Orestes, to recover her, assassinated Neoptolemus. According to Ovid she had always been faithful to her first lover. With her he retired to his kingdom of Argos. His old age was crowned with peace, and he died in his ninetieth year, leaving his throne to his son Tisamenus; who was, three years after, expelled by the Heraclide. Orestes died in Arcadia, by the bite of a serpent; and the Lacedæmonians, who had become his subjects at the death of Menelaus, were directed by an oracle to bring his bones to Sparta. They were some time after discovered at Tegea, and his statue appeared to be seven cubits, according to the traditions mentioned by Herodotus and others. The friendship of Orestes and Pylades became proverbial; and the two friends received divine honors among the Scythians.

ORESTIDA, a country of Greece, south-west of Macedonia, so named by the subjects and descendants of Orestes, who settled in it, after they were expelled from Argos by the Heraclide.

OREWEED, or } Lat. *ora*, the shore. A

OREWOOD, *n. s.* { weed either growing upon the rocks under high water mark, or broken from the bottom of the sea by rough weather, and cast up by the wind and flood.—*Carw's Cornwall.*

ORFGILD, *n. s.* The restitution of goods or money taken away by a thief by violence, if the robbery was committed in the day-time.

ORFORD, a borough and market-town of Suffolk, eighty-nine miles from London, situated between two channels, where the river Ore, after having joined the Ald, falls into the sea. It was once a large populous town, with a castle and nunnery, of which there are still some ruins. The towers of the castle and its church are a sea mark. The town was incorporated by Henry III., has a mayor, eighteen portmen, twelve chief burgesses, a recorder, a town clerk, &c. It sent members to parliament in the 26th of Edward I., and still sends two. It is an ill-built town, but was once a place of considerable trade, till, the sea throwing up a dangerous bar at the mouth of the harbour, it was choked up, and the town fell to decay. In it is a town-hall, and an assembly-house. It is eighteen miles east by north of Ipswich.

ORFORD, CAPE, a point on the north-west coast of North America, formed by the low land, projecting from a high rocky coast a considerable way into the sea, and terminating in a wedge-like cone. It was thus called by Vancouver, in honor of the earl of Orford, and is in long. 124° 31' W., lat. 42° 52' N.

ORGAGNA (Andrew), an excellent Italian painter, born at Florence in 1329. In his youth he learned sculpture; he was also a poet and an

architect. His style resembled that of the other painters of his time. Most of his works are at Pisa. The most admired of them is his picture of the Last Judgment, in which he painted his friends among the blessed, and his foes in hell. He died in 1389.

ORGAN, *n. s.* } Fr. *organe*; Ital. *Span.*
ORGANIC, *adj.* } and Port. *organo*; Lat.
ORGANICAL, } *organum*; Gr. *opyavov*.
ORGANICALLY, *adv.* } An instrument of any
ORGANISM, *n. s.* } kind, particularly a nat-
ORGANIST, } ural instrument con-
ORGANISATION, } sidered in relation to
ORGANISE, *v. a.* } some specific faculty;
ORGAN-LOFT, *n. s.* } thus we call the ear
ORGAN-PIPE. } the organ of hearing: a

wind instrument of music, of peculiar power: organ is, relating to organs; composed of various co-operating parts; instrumental: organically, by means of organical disposition of parts: organism, organic structure: organist, one who plays upon the organ: organisation, construction by mutually subservient parts; methodical structure or arrangement: to organise is to form, construct, or bring into action organically, or by the mutual co-operation of parts: organ-loft, and organ-pipe, are the loft and pipe of a musical organ.

As the soul doth *organize* the body, and give unto every member that substance, quantity, and shape, which nature seeth most expedient, so the inward grace of sacraments may teach what serveth best for their outward form. *Hooker.*

When he shall hear she died upon his words,
The ever lovely *organ* of her life
Shall come apparelled in more precious habit
Than when she lived indeed. *Shakespeare.*

The thunder;
That deep and dreadful *organpipe*, pronounced
The name of Prosper. *Id. Tempest.*

For a mean and *organ*, by which this operative virtue might be continued, God appointed the light to be united, and gave it also motion and heat. *Raleigh.*

The aptness of birds is not so much in the conformity of the *organs* of speech, as in their attention. *Bacon.*

He rounds the air, and breaks the hymnick notes
In birds, heaven's choristers, *organick* throats;
Which, if they did not die, might seem to be
A tenth rank in the heavenly hierarchy. *Donne.*

He, with serpent tongue
Organick, or impulse of vocal air,
His fraudulent temptation thus began. *Milton.*

Every man's senses differ as much from others in their figure, colour, site, and infinite other peculiarities in the *organization*, as any one man's can from itself, through divers accidental variations. *Glennville's Scopsis.*

They who want the sense of discipline, or hearing, are by consequence deprived of speech, not by any immediate *organical* indisposition, but for want of discipline. *Holder.*

A genial and cherishing heat so acts upon the fit and obsequious matter, wherein it was harboured, as to *organize* and fashion that disposed matter according to the exigencies of its own nature. *Boyle.*

An *organist* serves that office in a publick choir. *Id.*

She could not produce a monster of any thing that hath more vital and *organical* parts than a rock of marble. *Ray.*

Those nobler faculties in the mind, matter *organ-ized* could never produce. *Id. on the Creation.*

All stones, metals, and minerals, are real vegetables; that is, grow *organically* from seeds, as well as plants. *Locke.*

The identity of the same man consists in a participation of the same continued life, by constantly fleeting particles in succession vitally united to the same *organized* body. *Id.*

That being then one plant which has such an *organisation* of parts in one coherent body, partaking of one common life, it continues to be the same plant, though that life be communicated to new particles of matter, in a like continued *organisation*. *Id.*

How admirable is the natural structure or *organism* of bodies. *Graw's Cosmologia.*

Each then has *organs* to digest his food;
One to beget, and one receive, the brood. *Prior.*

The *organical* structure of human bodies, whereby they live and move, and are vitally informed by the soul, is the workmanship of a most wise, powerful, and beneficent being. *Bentley.*

While in more lengthened notes and slow,
The deep, majestic, solemn, *organs* blow. *Pope.*

Five young ladies of no small fame for their great severity of manners, would go no where with their lovers but to an *organloft* in a church, where they had a cold treat and some few opera songs. *Tatler.*

ORGAN, in music, denotes the largest and most harmonious of all wind instruments; on which account it is called *opyavov*, the organ, the instrument, by way of excellence; chiefly used for playing a thorough bass, with all its accompaniments.

That organs are the invention of remote antiquity is generally allowed; but the particular time and country in which the discovery was made are uncertain. In ancient authors there are various passages where mention is made of the organ, but it was probably an instrument very different from that which now goes by this name.

It appears indeed to have been borrowed by the Latins from the Greeks, but not to have been in general use till the eighth century. Vitruvius describes an organ in his tenth book, and St. Jerome mentions one with twelve pairs of bellows, which might be heard 1000 paces, or a mile off; and another at Jerusalem, which might be heard at the Mount of Olives.

It has been affirmed that, in France, it was not known till the time of Louis I. A. D. 815, when an Italian priest taught the use and construction of it, which he had learned at Constantinople. By some, however, it has been carried as far back as Charlemagne, and by others as far as Pepin.

See article Music, p. 280.

The Greeks called the organ *organum*, to indicate instrumental music, which, by uniting several pipes, imitated several voices; and to distinguish the organ from other musical instruments the Romans called it *organum pneumaticum*, an instrument of air. We do not find, says Mr. Danneley, any traces amongst the ancients which inform us that there was, in their time, an instrument at all assimilating with our organ, excepting the clepsydra, and the instrument invented by Pericles, unless amongst the Hebrews, when in the time of David and Solomon, one amongst others, was made use of in their religious ceremonies called the huggab, composed of several pipes of different sizes methodically ar-

ranged. But since the Jews were dragged into captivity and the destruction of their temple under Titus, nothing is known either of their instruments or of their music. The invention of the modern organ is generally attributed to Archimedes, who flourished 200 years before the Christian era; and he is said to have made the bellows act by a hydraulic machine, but we are ignorant of the substitute for the clavier (see CLEPSYDRA) and of the number of notes of which his organ was composed. This species of mechanical organ was in use till the sixth century; but since that epoch this instrument has been enlarged and brought to perfection; and in the eighth century the clavier comprised only two octaves. Matheson, in his *Perfect Organist*, says that the English had their first organ in 650. In the tenth century there were several organ builders in Italy, and in the eleventh organs were built in the churches belonging to the monasteries; from the twelfth to the fifteenth the art of constructing organs increased, particularly in Germany; the clavier comprised already three octaves, and in the year 1480 the pedal was introduced by a person named Bernard; in the sixteenth century organs were made with two claviers or rows of keys, comprising four octaves and with a greater number of stops. Since that time this instrument has become not only one of the principal ornaments in churches, but it has also contributed to the perfection of the musical art; and this art, as well as that of poetry, painting, architecture, eloquence, and literature in general, is much indebted to religion for its advancement and support.

Bellarmino says that the organ began to be used in the service of the church about 660. Ammonius thinks, however, that this happened after 820, in the time of Louis the Pious. The learned Bingham, in his *Origines Sacræ*, affirms that organs were not used till after the time of Thomas Aquinas, and he adds these words: 'Our church does not use musical instruments, as harps and psalteries, to praise God withal, that she may not seem to Judaize.' Hence it has been concluded, by the learned Gregory, that they were not used in churches in his time, about A.D. 1250. It appears, however, from the testimony of Gervas the monk of Canterbury, who flourished A.D. 1200, that organs were introduced upwards of 100 years even before that time. If Gervas's authority be held good, it will give countenance to a pretty general opinion, that in Italy, Germany, and England, they became frequent about the tenth century. See MUSIC. But it is certain that the use of the organ was very common in the latter ages of the church, and the propriety of it was undisputed. In the seventeenth century, however, during the civil wars, organs were removed from the churches in England; and so generally reprobated that, at the Restoration, there could scarce be found either organists, organ builders, or singers. Organs have never yet been used in the establishment of Scotland since it became Presbyterian; but they are used in Holland, where that form of church government also obtains.

ORGANS, REMARKABLY LARGE. The organs in Germany (says Dr. Burney) in magnitude,

and the organists in abilities, seem unrivalled in any other part of Europe, particularly in the use of pedals. In Marpurgh's *Essays*, vol. iii., there is a minute account of a variety of organs in Germany; of all which the longest pipe of the manuals is sixteen feet long, and of the pedals thirty-two. One of the largest organs in Germany is at Gorliz in Upper Lusatia. The uncommon merit of Handel as an organist is well known. The organ in the cathedral church at Ulm in Germany is ninety-three feet high and twenty-eight broad: its largest pipe is thirteen inches diameter, and it has sixteen pairs of bellows.

ORGAN, THE CHURCH, consists of two parts; the main body, called the great organ; and the positive or little organ, which forms a small case or buffet, commonly placed before the great organ. The size of an organ is generally expressed by the length of its largest pipe: thus they say, an organ of eight, sixteen, thirty-two feet, &c. The several parts of the church organ are as follow:—H I H, plate ORGAN fig. 1, is the sound-board: which is composed of two parts, the upper board or cover H H H, and the under-board H I, which is much thicker than the other; each of these consists of several planks laid with their edges to each other, and joined very close together. In the under side of the lower board there are made several channels, which run in the direction L L, M M, &c., and are continued as far as there are stops in the organ, and come almost to the edge H K. These channels are covered over very close with parchment or leather all the way, except a hole that is commonly at the fore end next H K, upon which a valve or puff is placed. These channels are called partitions. When this valve or flap is shut, it keeps out the air, and admits it when open. On the upper side of the lower board there are likewise cut several broad square channels, lying across the former, but not so deep as to reach them; these lie in the direction L N, P Q, &c. To fit these channels, there are the same number of wooden sliders or registers *f, f, f*, &c., running the whole length; and these may be drawn out or thrust in at pleasure. The number of these is the same as that of the stops in the organ. I K K K is the wind chest, which is a square box fitted close to the under side of the lower board, and made air-tight, so that no air can get out but what goes through the valves along the partitions. V, V, are the valves or puffs which open into the wind-chest; they are all enclosed in it, and may be placed in any part of it, as occasion shall require. One of these valves, with the spring that shuts it, and the wire that opens it, is represented by fig. 2. C, D, E, F, &c., are keys on which the fingers are placed when the organ is played: these keys lie over the horizontal bar of wood W, in which are stuck a usual number of wire pins *s, s*, on which keys are fixed; and the keys move up and down on the ear, as on a centre. There is another bar, against which the keys fall when put down, and which is here marked 3: on this also are several wires, which go through the keys to guide them; and on this bar a list is fastened to hinder the keys from knocking against the wood. The keys are made to communicate with the valves several ways, as

we shall now describe. First *s, s, s*, are the key-rollers, moving on the pivots *t, t*: these rollers lie horizontally, one above another, and are of such a length as to reach from the valve to the key; *a, a, a*, are arms or levers fixed to the key rollers; *w, w*, the valve wires fixed to the arms *a, a*, and to the valves *V*, and go through the holes *h, h*, in the bottom of the wind-chest: *b, b, b*, are likewise arms fixed to the key-rollers: *d, d, d*, the key-wires, fixed to the arms *b, b*, and to the keys *C, D, E*. When the end of any one of the keys *C, D, E*, is put down, it pulls down the arm *b*, by the wire *d*, which turns about the roller *s* with the arm *a*, that pulls down the wire *w*, which opens the valve that is shut by the spring as soon as the pressure is taken off the key. In this construction there must be a worm spring fastened to the key, and to the bar *W* on the further side, to keep down the end *5* of the key. Another method of opening the valves is thus: *xy, xy*, are slender levers, moveable on the centres *1, 1*; *5x, 5x*, are wires going from the further ends of the keys to the ends *x* of the levers; *yV, yV*, are other wires, reaching from the ends *y* of the levers, through the holes *h*, to the valves *V*. So that putting down the key, *C, D*, &c., raises the end *5*, which thrusts up the end *x* of the lever, by the wire *5x*: this depresses the end *y* of the lever, which pulls down the wire *yV*, and opens the valve *V*. A third way of opening the valves is this: at the end of the key *b* is a lever *8, 9*, moving in the centre *7*. This makes, with the key, a compound lever. From the end *9* a wire goes to the valve. Now the putting down the end *6* of the key raises the end *8*, which depresses the end *9*, of the lever, *8, 9*, pulls down the wire, and opens the valve. There is only one of these in the plate, and but a few of the others, to avoid confusion. *R, R*, are the rollers, to move the sliders, by help of the arms *cf, cf*, which are fixed horizontally in these rollers: *ke, ke*, are also levers fixed in the rollers; *le, le*, are the handles, which lie horizontally, and pass through the holes *ll*; they are fastened to the lever *ke*, being moveable about a joint at *e*. Any handle, *lp*, being drawn out, pulls the end *e* towards *l*, which turns about *Rk*, along with the arm *cf*; and the end *f* pulls out the slider *fg*; and, when *p* is thrust in, the arm *cf* likewise thrusts in the slider *fg*. Upon the several rows of holes which appear on the top of the upper board there are set up an equal number of rows of pipes. The pipes of an organ are of two kinds; the one has a mouth like a flute, the other with reeds. The first, called pipes of mutation, consist (1) of a foot *AA BB* (fig. 3), which is a hollow cone, which receives the wind that is to sound the pipe: (2.) To this foot is fastened the body of the pipe *BB DD*. Between the foot and the body of the pipe is a diaphragm or partition *FEF*, that has a long but narrow aperture by which the wind comes out; over this aperture is the mouth *BBC*, whose upper lip *C*, being level, cuts the wind as it comes out. The pipes are of pewter, of lead mixed with a twelfth part tin, and of wood. Those of pewter are always open at their extremities: their diameter is very small, and their sound very clear and shrill. Those of lead mix-

ed with tin are larger; the shortest are open, the longest quite stopped; those of a mean size are partly stopped, and have besides a little ear on each side the mouth, to be drawn closer or set further asunder, in order to raise or lower the sound. The wooden pipes are square, and their extremity is stopped with a valve or tampon of leather. The sound of the wooden and leaden pipes is very soft; the large ones stopped are commonly of wood, the small ones of lead. The longest pipes give the gravest sound, and the shortest the most acute: their lengths and widths are determined by a fixed proportion to their sounds; and their divisions are regulated by a rule, which is called the diapason. The longest has commonly sixteen feet; but in very large organs it has thirty-two feet. The pedal tubes are always open, though made of wood and of lead. Whatever note any open pipe sounds, when its mouth is stopped it will sound an octave lower, and a pipe of twice its capacity will likewise sound an octave lower. A reed-pipe consists of a foot *AA BB* (fig. 4), that carries the wind into the shallot or reed *CD*, which is a hollow demicylinder, fitted at its extremity *D* into a sort of mould, by a wooden tampon *G*. The shallot is covered with a plate of copper *KK'LL*, fitted at its extremity *II*, into the mould, by the same wooden tampon. Its other extremity *KK* is at liberty: so that the air entering the shallot makes it tremble or shake against the reed: and the longer that part of the tongue *II*, which is at liberty, is made, the deeper is the sound. The mould *II*, that serves to fix the shallot or reed, the tongue, tampon, &c., serves also to stop the foot of the pipe, and make the wind go out wholly at the reed. Lastly, in the mould is soldered the tube *HH*, whose inward opening is a continuation of that of the reed: the form of this tube is different in different ranks of pipes. The degree of acuteness or gravity in the sound of a reed pipe depends on the length of the tongue, and that of the pipe *CK*, taken from the extremity of the shallot to the extremity of the tube. The quantity or intension of the sound depends on the width of the reed, the tongue, and the tube; as also on the thickness of the tongue; the figure of the tube, and the quantity of wind. To diversify the sounds of the pipes, a valve is added to the port-vent, which makes the wind go out in fits or shakes. In fig. 1, *X* represents a flute-pipe of wood, *Z* a flute-pipe of metal, *Y* a trumpet-pipe of metal. The pipes, to prevent them from falling, pass through holes made in boards, placed upon the upper board. The pipes are made to communicate with the wind-chest in the following manner: there are holes bored that go through the upper and lower boards and through the slider (when it is drawn out) into the partition below; so that any pipes placed upon those holes will then communicate with the partition, which by its valve communicates with the wind-chest. But, when the slider is thrust in, its holes do not answer to those in the upper and lower boards; therefore the communication is stopped, so that no wind can get to the pipe. To every large organ there must be at least two pairs of bellows, which are marked in fig. 1, by *TU, TU*. *O, O*, are handles, moving upon the

axis *nn*, *nn*. Each of these bellows consists of two boards, the lowest of which is immovable; and in this there is a valve *r*, opening inwards, and a tube leading to it, called the conveying tube. There is also a hole in this under board, from which a tube leads to the port-vent, which is a square tube marked 4, rising upward, and inserted into the under side of the wind-chest at 2. In the tube leading to the port-vent there is a valve that opens towards the port-vent, and suffers the air to go up the port-vent, but not to return. Now the handle *O*, being pulled down, raises the upper board *T*, and the air enters through the valve *r*; and, when the handle is let go, the weight of the upper board, which carries three or four pounds to every square foot, continually descending, drives the air through the port-vent to the sound board: and, as the bellows work alternately, one pair is constantly descending, which occasions a continual blast through the port-vent. In chamber organs there is but one pair of bellows; but they are formed of three boards, in the manner of a smith's bellows, and so have a continual blast. All the internal structure of the organ is concealed from the sight by the front of the instrument, which stands upon the part between the numbers 3 and 6 (fig. 1). In every organ the number of partitions *L L*, *M M*, &c., there are in the sound-board (fig. 1) that of the valves *V V*, that of the rollers *s s*, or of the levers *x y*, or 8 9, and their wires, and that of the keys *A, B, C*, &c., must be always equal. Large organs have commonly four or five sets of keys, besides those that belong to the pedals or large pipes, the stops of which are played by the feet. These command certain pipes, which, to increase the harmony, are tuned below the diapason. The keys of an organ are usually divided into four octaves; which are the first sub-octave, second sub-octave, middle octave, and first octave. Each octave is divided into twelve stops or frets, of which seven are black and five white; the former mark the natural notes, and the latter the artificial, that is, flats and sharps. The number of keys, therefore, when there are four octaves, must be forty-eight. Some organists add one or more stops to the first and second sub-octaves. The pedals have two or three octaves, at the option of the organist: so that the number of stops is indeterminate. The keys are placed between *G G*, (fig. 1), but the figure could not contain them all. There are also as many handles *l, l*, &c., rollers *R, R*, &c., sliders *f, f*, &c., as there are stops upon the organ; and it must be observed, that between the sliders *f, f*, &c., there are as many sliders on the right hand and the same number of handles and rollers, and other rows of pipes placed between *L N*, *P Q*, which could not be expressed in the figure. The least pipes and partitions are placed toward the middle of the organ, and the greatest on the outside. The stops of an organ have various denominations, according to the sounds they are to produce; some of which are diapason, principal, fifteenth, twelfth, tierce, cornet, trumpet, French horn, vox humana, flute, bassoon, cremona, &c. The foreign organs especially, those of Germany, have many more: particularly that in the cathedral of Mentebourg in Suabia, which has seventy-

five stops, and contains no fewer than 7500 pipes. The organ at St. Paul's has only 1976 pipes. The organ at Haerlem is said to have sixty stops, many of them but little known to the English workmen, and distinguished by names that express the sound which they produce. When this magnificent instrument is played the handle *O* of the bellows is first put down, which raises the upper board *T*, and gives room for the air to enter by the valve *r*. Then the other handle *O* is put down; in the mean time the board *T*, belonging to the first handle, descending, and shutting the valve *r*, drives the air through the other valve, up the port-vent, and into the wind-chest. Then drawing out any handle, as that of the flute-stop *p l*, which draws out the slider *f g*, all the pipes in the set *L N* are ready to play, as soon as the keys *C, D, E*, &c., are put down; therefore, if the key *D* be put down, it opens the corresponding valve *m V*, through which the air enters into the pipe *X*, and makes it sound. In the same manner any other pipe in the set *L N* will sound when its key is put down; but no pipe, in any other set, will sound till the slider be drawn out by its corresponding handle. Among the modern improvements of the organ, the most remarkable are the swell, the tremblant, and the horizontal bellows; the first, invented by an English artist, consists in a number of pipes placed in a remote part of the instrument, and enclosed in a kind of box, which, being gradually opened by the pressure of the foot, increases the sound. There is a tremblant in the organ at the German chapel in the Savoy, the principles of which, together with those of the horizontal bellows, are explained in our description of the celebrated organ of St. Sulpice in Paris.

ORGAN, THE HYDRAULIC, denotes a musical machine that plays by water instead of wind. Of these there are several in Italy, in the grottoes of vineyards. Ctesebes of Alexandria, who lived in the time of Ptolemy Euergetes, is said to have invented organs that played by compressing the air with water, as is still practised. Archimedes and Vitruvius have left us descriptions of the hydraulic organ. In the cabinet of queen Christina is a beautiful and large medallion of Valentinian, on the reverse whereof is seen one of these hydraulic organs; with two men, one on the right, the other on the left, seeming to pump the water which plays it, and to listen to its sound. It has only eight pipes, placed on a round pedestal. The inscription is *PLACEAS PETRI*.

An eight feet is a term used to describe an organ the lowest pipe of which measures eight feet in length. A stopt eight feet is one of which the pipes of four feet, being stopt, produce the effect of an open eight feet; because in that case the column of air of four feet has double the distance to make before it finds an issue; it has therefore eight feet instead of four, and gives the unison of the open pipe of that size. A pipe measuring sixteen feet and stopt, therefore, will produce the unison of an open pipe of thirty-two feet.

The pipes of organs are distinguished by their sound: some are soft, brilliant, and some of a piercing or shrill nature, and extend throughout the clavier; some imitate the flute, hautboy,

clarinet, and bassoon, whilst others imitate the trumpet, trombone, cremorne, &c., and extend only through certain portions of the clavier; i. e. according to the diapason or natural compass of the instruments imitated. But in order to provide for these deficiencies of the clavier other stops of a corresponding quality of tone are joined with the short stops. The materials employed for the formation of pipes are wood, copper, pewter, and tin; copper and pewter amalgamated form the metal; lead, wood, and lead; lead and tin or pewter amalgamated; silver and copper gilt, white iron and carton. In general the harder the substance, as copper and silver, pewter or tin, the more brilliant or piercing the tone. Pipes of wood or lead, on the contrary, give soft sounds; there are also pipes of porcelain, glass, and baked earth; these are far less subject to be out of order by the change of temperature of the atmosphere than those of wood or metal.

An organ pipe of the deepest species will not suddenly intonate when not accompanied with the sound of another pipe; but, if its octave be in play at the same time, it will answer the fleetest touch upon the clavier: because the tone of the largest pipe, being in accordance, causes a motion of the air contained in the greater pipe, and the vibrations of the contained air, being coincident with those of the sound of the pipe, promote its speaking by putting the pulses of the mouth into a regular motion. The greater the pipe the less quickly it intonates of itself, and the shorter, therefore, the pipe the more suddenly it intonates: a principle imperatively requiring a suitable mixture of stops for the production of simultaneous and correct harmony.

To the temperament given to the principal, all other stops are tuned; it extends throughout the clavier and is made of wood, also of metal. The lowest pipe of this stop measures either four, eight, sixteen, or thirty-two feet in length.

An organ, however large and numerous its stops, is never displayed to advantage if entirely tuned in octaves and unisons to the principal; and unless the third, decima, tenth, or seventeenth, and the fifth, or twelfth, of each of these octaves and unisons be heard at one and the same time, much of the brilliancy and richness of the organic sound would be lost. Stops denominated thirds and fifths are therefore inserted amongst the list of organ stops. But as these thirds and fifths which, without trial, one might be induced to think insufferable to the ear when repeated in succession throughout the instrument, constitute perfect major harmonic combinations of sound, their effects, as may easily be understood, would be intolerable were they suffered to predominate over the unisons and octaves of the other stops: perfect harmonics by direct movement being strictly forbidden; and a major species of harmonic combination of sound would be set in opposition, occasionally, with the minor mode, to the dominant of which it could only satisfactorily amalgamate. These accessory stops, although extending throughout the organ, do not absolutely comprise, on account of their peculiar diapason or extent, more than three octaves; these are repeated in the lower part of the clavier. Flutes,

tierces, and fifths, comprising each an extent of one octave only, are occasionally repeated to every octave of the clavier: a system productive of the finest effects. The greater number of stops tuned in octaves and unisons, the greater must be the proportion of tierces, fifths, and compound stops. The tierce stop is considered higher than the fifth, a principle ascertained to be derived from nature: every sonorous body producing by its vibrations the sounds of the twelfth and seventeenth major. See SOUND.

Cornets and mixtures are designated compound stops.

Cornets are of three species, consisting of five ranks of pipes each, called the grand cornet, solo cornet, and echo cornet, each lever of which causes five different pipes to sound at the same time, viz. the octave, fifth, fourth, and major third, yet they produce but one sound: for instance, when the lever or the note C is held down it produces the octave, its twelfth, double octave, and its seventeenth major, but C is only supposed to be heard or appreciated, which proves that sound is not a simple element, but an aggregate of concomitant sounds. The cornet stops were formerly much used in churches with the diapasons in the interludes, and giving out of the psalms. In modern organs these compound stops, from motives of economy, in England, have been superseded by others of the reed species. Dr. Smith is mistaken in saying that the best tuning of an organ cannot wholly prevent that disagreeable battering of the ears with a constant rattling noise of beats, quite different from all musical sounds, and destructive of them, chiefly caused by the compound stops called the cornet, mixture, and sesquialter: these battering effects arising in cases only where a disproportionate force is given to the fundamental stops of the octaves and unisons.

The mixture is composed of four, six, eight, ten, and, upon the continent, often extends to twelve ranks of pipes. The pedals have also their mixture stops, and are in proportion to those belonging to the claviers: without this proportion the inequality of tone would be insupportable and totally destructive of harmony. Mixtures are divided into the great, middle, and little, of which one, two, or the whole may, by the action of a coupling stop, be brought to act simultaneously with the other stops, i. e. according to the proportionate force required by quantity, and quality of tone given to the different claviers.

The bellows expiring and inspiring the air by turns by the aid of levers, give a brisk agitation to the air by enlarging and contracting its capacity. This pneumatic machine has been much improved of late in England in the horizontal bellows; a column of air being now supplied and drawn at the same moment by the action of a crank and other appendages, instead of levers, &c., upon four feeders and pumbers.

Organs vary in size, and are of two, four, five, six, seven, fifteen, twenty, thirty-six, forty-six, fifty-six, sixty, sixty-one, sixty-five, seventy-five, and eighty stops, with from one to five claviers, and one or two claviers for the feet.

The following is the description of the organ

at St. Sulpice in Paris. It has five claviers for the hands besides those for the feet; fourteen pairs of bellows six feet in length by three and a half, of which six are for the great organ, four for the positive, and four for the pedals, and is considered the most complete in Europe:—

First clavier.

1. Grand cornet, composed of five ranks of pipes, made of pewter.
2. Montre (front) of eight feet pewter.
3. Bourdon (stopt diapason) of sixteen feet; the upper half with a small funnel or pipe at the top of each tube, and the lowest entirely stopt, made of oak.
4. Flute of eight feet in pewter, comprising three octaves.
5. Bourdon (stopt diapason) of four feet, stopt in unison, with an open diapason of eight feet.
6. Prestant, from prestare, signifying to figure, to run divisions, to ornament a given subject (open diapason) of four feet, in pewter.
7. Nazard of four feet, the fifth from the prestant, made of pewter.
8. Quarte de nazard, the octave of the prestant, of two feet in pewter.
9. Doublette of two feet in pewter, the octave of the prestant.
10. Tierce, seventeenth.
11. Larigot, the octave flute.
12. Furniture, or mixture, of five ranks in pewter.
13. Cymbale of four ranks of pipes in pewter.
14. Clarinet, of three perfect octaves, a reed stop made of pewter.
15. Cromorne, or crooked horn, a reed stop of four feet pewter, and of the bassoon species.
16. Bassoon, four complete octaves, pewter.
17. Trumpet of eight feet, four octaves, pewter.
18. Clarion of four feet, four octaves, pewter.

Second clavier.

1. Montre (front) of thirty-two feet, the upper half the clavier of pewter, the other of oak.
2. Montre of sixteen feet, an open stop made of pewter.
3. Bourdon of eight feet, stopt diapason.
4. Montre of eight feet, open diapason.
5. Flute of eight feet, open.
6. Grand cornet of five ranks of pipes, in pewter.
7. Bourdon, of four feet stopt; the treble and tenor open and made of pewter; the bass stopt, and made of oak.
8. Prestant of four feet, open.
9. Great nazard of six feet, sounding the fifth of eight feet.
10. Nazard, an open stop of three feet, the fifth of the prestant of four feet, in pewter.
11. A quarter nazard, an open stop of two feet in unison with octave of the prestant, of four feet in pewter.
12. Great tierce of three feet.
13. Little tierce.
14. Doublette the octave of the prestant.
15. Furniture of nine ranks of pipes.
16. Cymbale of five ranks. This stop is occasionally composed of nine ranks of pipes.
17. Trumpet of eight feet.

18. Vox humana. This stop is in unison with the open diapason, and is composed of short metal pipes of a wide and globular form at the top, resembling the human mouth.

19. Trumpet.

20. Trumpet of three octaves, doubled in the lower octave by a clarion.

21. Clarion in pewter.

Third clavier.

1. Grand cornet of five ranks of pipes
2. Bombarde of sixteen feet in pewter, of the reed species. This stop is sometimes made of wood.
3. Trumpet of eight feet, pewter.
4. Clarion of four feet, pewter.

Fourth clavier.

1. Open flute for solo, made of lead, descending to F below the treble staff.
2. Cornet, for solo, composed of five ranks of pipes, made of lead.
3. Hautboy, solo, made of pewter.
4. Trumpet, solo, in pewter.

Fifth Clavier.

1. Open flute, an echo stop, in lead, descending to C below the treble staff.
2. Bourdon, an echo stop, with a funnel at the top of each pipe.
3. Cornet of five ranks of pipes.
4. Trumpet.
5. Clarion.

Sixth Clavier.

1. Pedal of sixteen feet stopt, of wood.
2. Ditto.
3. Pedal of eight feet open.
4. Two pedals of eight feet open.
5. Pedal of the great nazard.
6. Pedal of four feet.
7. Pedal of the bombarde of thirty-two feet; a reed stop in wood.
8. Pedal ditto of twelve feet.
9. Trumpet pedal of twelve feet.
10. Second trumpet pedal of twelve feet.
11. Clarion pedal of six feet.
12. Two pedals of tremblants.

These stops consist of moveable machines placed in the principal channel of the wind-chest, near the port-vent to intercept the regular current of air. Turning upon their axes by the force of the wind, they give to the sound of the organ a trembling or beating effect, of which there are two sorts called the gentle and violent tremblants; the former consists of one plate, and the latter of two plates, of iron, inversely placed and fastened to a piece of wood. On certain occasions of divine service in the Roman church, these stops are exceedingly effective.

In addition to the number of stops already noticed, of which we have not their equivalents in England, are the flute creuse, cors de nuit, nassat, tibia angusta, flautone, musette, salcional, chalameau, shallmey, ranquet, regal, sourdine, viola da gamba, viol d'amour, violoncello, unda maris, vox angelica, forest flute, fistula vulgaris, bear flute, cornemuse, flageolet, bass cornet, violin, carillon or campanetta, bird stops of the nightingale and cuckoo, timbals, cymbals, fanfares, fugara, double flutes, bissera, and the

etalle, which consists of an immense number of small pieces of sonorous metal all turning upon separate axes, serving, by the action of the wind conducted from the wind-chest, to prolong the resonance of a pair of cymbals.

The etymology of many of the terms given to the above stops is unknown; their powers as combined with others more generally known to us being unnecessary to describe, we will conclude this article with a few remarks upon the proper management of the stops generally allotted to organs of English manufacture; of these, for the great organ, are open diapasons, stopt diapasons, principal, twelfth, fifteenth, tierce, mixture, or furniture, sesquialtra, trumpet, and cornet. For the choir organ are the stopt diapasons, flute, principal, twelfth, fifteenth, mixture, cremona, and vox humana; and for the swell are the open diapason, stopt diapason, principal, cornet, trumpet, and hautboy.

To produce the most perfect combination of organic sound, the flute stops form the principal attention of the experienced organists of Germany; the depth and shrillness of all other stops as of thirty-two, sixteen, four, two and one foot, being so arranged by them, that the greater powers of the larger pipes do not stifle the less powers of the smaller pipes.

A stop remarkable for its softness of tone must never be set in opposition with a powerful toned stop; several of the former may be effectively employed with the latter.

Too great a distance between the octaves, as for example, between a sixteen and a two, feet stop, must be avoided; a stop is well supported by another of an octave higher, as a thirty-two and a sixteen feet stop. A distance of an octave, or even a double octave, may be advantageously adopted in the performance of a solo, especially with a stop of peculiar qualities, as of the reed species, giving the harmonic support to the solo with the other hand upon a different clavier.

To the stops in general use, as the diapasons and principal, must be added, for the accompaniment of the psalms, tierces, twelfths, octaves, and fifteenths, according to their nearest proportions, and in proportion to the number of people assembled for the celebration of the divine service.

To the full organ may be added the reed stops and the whole play of the pedals; to the choir organ half the play of the pedals.

Reed stops, being of peculiar structure, require a different mode of treatment. They are used principally in solos, and in such a manner as appears best suited to the powers or expression of the human voice intended by the composer to be imitated. From the nasal qualities of some of the reed stops they should never be employed in the accompaniment of the psalms. The disagreeable qualities of some of the reed stops are lost in the combination with flute stops of eight or four feet.

Particular attention should be paid to the style of music to be executed, in order that the stops employed should be applicable to the expression required. In the performance of a specimen of harmony in four, five, or six sustained parts, flutes and diapasons are necessary,

and the reed stops are on no account to be tolerated. The attention of the organist is also particularly directed to the study of the lugubrious effects so peculiar to the stopt diapasons than which, when combined with the flute, nothing interests the heart so much or prepares the soul to devotional feeling. On the continent organs for this purpose are muffled or covered with cloth, and the tremblants are used. The expert organist profits greatly by the multiplicity of claviers, employing one for the harmonic support of the melody and the pedals for the bass, and another for the melody suitable for the diapasons of instruments or voices intended to be imitated, producing by this display of his tact, genius, and experience, the most grateful sensations upon the minds of the congregation.

The facility with which organists of Germany and France execute difficult passages with their feet upon the pedals, displaying at the same time their intimate knowledge of the powers of harmony upon different claviers with their feet, is truly astonishing, and, to musicians conversant only with the music generally adopted in the church of England, the recital of these extraordinary feats appears incredible. High heeled shoes facilitate much the execution of quick passages for the pedals.

From the great variety of forms and modes of worship observed in the Roman and Protestant churches in Germany, France, Italy, and Switzerland, the qualifications requisite for an organist are of greater magnitude than those necessary for one of the church of England. But, unfortunately, such is the degraded state to which sacred music is brought in our churches, that the ability of playing one of Handel's overtures and a couple of psalm tunes, are considered by the umpires deputed to decide upon the merits and demerits of the musical candidates, to be the only requisites for the regular installment of an organist. Hence, instead of a well conducted musical education, which, next to respectability of character, ought at all times to be the passport to the exercise of the honorable functions of an organist, persons of mean pretensions are put into the possession of the majority of the organs in the metropolis; a misfortune, tending not only to the exclusion from the celebration of divine service of that talent and experience which upon all occasions, would ensure the correct and judicious performance of the finest specimens of harmony and melody, of the German, Italian, and English schools, thereby forming and improving the taste for good music in England, but to facilitate the introduction of those contemptible and interminable effusions designated extemporaneous performances, which, resulting nearly in all cases from gross ignorance, throw ridicule upon the principles of music as a science, and are with difficulty to be endured with common decency although performed in the sanctuary.

The best and indeed the only criterion of the abilities of an organist is his intimacy with the finest specimens of classical music, and his power of performing them with facility and judgment. But, to ensure at all times the mode most suitable for the church, every parish should be provided

with a musical library consisting of about eight volumes of well and classically chosen compositions; and this music, as much as possible, should be strictly and regularly performed, a system ensuring at once respect for the organist, and that decency which is commended by the ritual.

The swell, on the score of expression, is the most valuable part of the organ, but a dangerous instrument in the hands of an organist not gifted with an ear to sound, as in discourse, musical periods with discrimination.

ORGASM, *n. s.* Fr. *orgasme*; Gr. *οργασμος*. Sudden vehemence.

This rupture of the lungs, and consequent spitting of blood, usually arises from an *orgasm*, or immoderate motion of the blood. *Blackmore.*

By means of the curious lodgment and inosculation of the auditory nerves, the *orgasms* of the spirits should be allayed, and perturbations of the mind quieted. *Derham.*

OR'GEIS, *n. s.* A sea-fish, called also organling, corruptions of the orkenyling, perhaps as being taken on the Orkney coast.

ORGIA, feasts and sacrifices in honor of Bacchus, held every third year, and chiefly celebrated by women, called Bacchæ. The chief solemnities were performed in the night, to conceal, perhaps, their shocking impurities; and a mountain was generally chosen as the place of celebration. They were instituted by Orpheus; and from him are sometimes called Orphica. Authors are not agreed as to the derivation of the word; but from the frantic proceedings of the Bacchanalians, *οργη*, furor, seems to be the true etymology. See BACCHANALIA. Orgia, according to Servius, was a common name for all kinds of sacrifices among the Greeks, as ceremoniz was amongst the Romans.

ORG'ILLOUS, *adj.* Fr. *orgueilleux*. Proud; haughty Not in use.

From isles of Greece

The princes *orgillous*, their high blood chafed,
Have to the port of Athens sent their ships.

Shakespeare.

OR'GIES, *n. s.* Fr. *orgies*; Lat. *orgia*. The old mad rites of Bacchus; frantick revels.

These are nights,
Solemn to the shining rites
Of the fairy prince and knights,
While the moon their *orgies* lights.

Ben Jonson.

She feigned nocturnal *orgies*; left my bed,
And, mixed with Trojan dames, the dances led.

Dryden.

In Bacchus' *orgies* I can bear no part,
And scarcely know a diamond from a heart.

Whyte's Poems.

ORGUES, in the military art, are thick long pieces of wood, pointed at one end, and shod with iron, loose one from the other; hanging, each by a particular rope or cord, over the gateway of a strong place, perpendicularly, to be all let fall at once in case of the approach of an enemy. Orgues are preferable to hersees or portcullices, because these may be either broke by a petard, or they may be stopped in their falling down; but a petard is useless against an orgue, for, if it break one or two of the pieces, they im-

mediately fall down again and fill up the vacancy; or, if they stop one or two of the pieces from falling, it is no hindrance to the rest; for, being all separate, they have no dependence upon one another. It is also the name of a machine composed of several harquebuss or musket barrels bound together, by means whereof several discharges are made at the same time. It is used to defend breaches and other places attacked.

ORIBASIA, in botany, a genus of the monogynia order and pentandria class of plants, natural order forty-seventh, stellatæ: cor. small, tubulated, and monopetalous; pericarp a globular berry, grooved longitudinally; quinquelocular and containing one seed. Of this there are six species, all natives of the warmer parts of America.

ORIBASIVS, or ORIBASUS, a celebrated physician, greatly esteemed by the emperor Julian, in whose reign he flourished. He abridged the works of Galen, and of all the most respectable writers on physic, at the request of the emperor. He accompanied Julian into the east, but his skill proved ineffectual in attempting to cure the fatal wound which his benefactor had received. After Julian's death he fell into the hands of the barbarians. The best edition of his works is that of Dundas, 4to. Lug. Bat. 1745.

OR'ICHALCH, *n. s.* Lat. *orichalcum*. Brass. See AURICHALCUM.

Nor Bilbo steel, nor brass from Corinth fet,
Nor costly *orichaleh* from strange Phoenix,
But such as could both Phæbus' arrows ward,
And the hailing darts of heaven beating hard.

Spenser.

ORICHALCH, ORICHALCUM, or AURICHALCUM, a metallic substance resembling gold in color, but very inferior in value. It was well known to the old Romans, who often took advantage of its resemblance to gold; for some sacrilegious characters, who could not resist the temptation of taking gold from temples and other public places, chose to conceal their guilt by substituting orichalcum for it. It was thus that Julius Cæsar acted, when he robbed the capitol of 3000 pound weight of gold; in which he was followed by Vitellius, who despoiled the temples of their gifts and ornaments, and put this inferior metal in their place. It has been a matter of dispute, with philosophers and others, what this metal could be, or how it was procured or made; it is probable, at least, that it was greatly analogous to our brass, if not wholly the same with it. See BRASS. The resemblance of brass to gold, in color, is obvious at first sight. Both brass and gold are susceptible of a variety of shades of yellow, in proportion to their alloy with copper; but the nearness of the resemblance is sufficiently proved by the difficulty of distinguishing substances gilded with brass or Dutch leaf from such as are gilded with gold leaf. The Romans knew the manner of making orichalcum, and the materials from which they made it were the very same from which we make brass. There are, indeed, authors of repute who think otherwise. M. Cronstedt does not think it just to conclude from old coins and other antiquities, that it is evidently proved that the making of brass was known in the most

ancient times ; and the authors of the French Encyclopédie assure us that our brass is a very recent invention. It appears, however, from Pliny's Natural History, lib. xxxiv, sect. 2, and from the concurring testimony of other writers, that orichalcum was not a pure or original metal ; but that its basis was copper, which the Romans changed into orichalcum by means of cadmia, a species of earth which they threw upon the copper, and which it absorbed. The testimony of Ambrose, bishop of Milan, in the fourth century ; of Primasius, bishop of Atrumentum, in Africa, in the sixth ; and Isidorus, bishop of Seville, in the seventh, all confirm Pliny's account. We may therefore safely conclude that the Romans knew the method of making brass by mixing cadmia or calamine with copper ; yet it is probable they were not the inventors of this art. It appears from a variety of testimonies that brass was made in Asia, in a manner very similar to that at Rome ; and it is supposed that in India it was made in the remotest ages. It is generally supposed that there were two sorts of orichalcum, one factitious, the other natural. The factitious, whether we consider its qualities or composition, appears to have been the same with our brass. As to the natural orichalcum, it is not impossible that copper ore may be so intimately blended with ore of zinc, or of some other metallic substance, that the compound, when smelted, may yield a mixed metal of a paler hue than copper, and resembling the color of either gold or silver. In Du Halde's History of China we meet with the following account of the Chinese white copper :—' The most extraordinary copper is called de-tong, or white copper ; it is white when dug out of the mine, and still more white within than without. It appears, by a vast number of experiments made at Pekin, that its color is owing to no mixture ; on the contrary, all mixtures diminish its beauty ; for, when it is rightly managed, it looks exactly like silver ; and were there not a necessity of mixing a little tutanag, or some such metal, with it, to soften it and prevent its brittleness, it would be so much the more extraordinary, as this sort of copper is perhaps to be met with nowhere but in China, and that only in the province of Yun-nan.'—Vol. I., p. 16. Notwithstanding this, it is certain that the Chinese white copper, as brought to us, is a mixed metal ; so that the ore from which it is extracted must consist of various metallic substances, and from some such ore it is possible that the natural orichalcum, if ever it existed, may have been made. But, though the existence of natural orichalcum cannot be proved impossible, yet there is reason to doubt whether it ever had a real existence. We know of no country in which it is now found ; nor was it any where found in the age of Pliny ; nor does he seem to have known the country where it ever had been found. Plato acknowledges that orichalcum was a thing only talked of in his time ; it was nowhere then to be met with, though in the island of Atlantis it had been formerly extracted from its mine. The Greeks were in possession of a metallic substance, called orichalcum, before the foundation of Rome ; for it is mentioned by Homer and by

Hesiod in such a manner as shows that it was then held in great esteem. Other ancient writers have expressed themselves in similar terms of commendation ; and it is principally from the circumstance of the high reputed value of orichalcum that authors are induced to suppose the ancient orichalcum to have been a natural substance. But this conclusion cannot be justly drawn from their encomiums upon it ; for, at whatever time the method of making it was first discovered, both its novelty and scarceness, joined to its utility, would enhance its value. Respecting the etymology of the word there is great diversity of opinions. Those who write it aurichalcum think it is composed of the Latin word aurum, gold, and the Greek χαλκος, brass or copper. The most general opinion is, however, that it is composed of ορος, a mountain, and χαλκος, alluding to its being found in mountains. See Memorials of the Literary and Philosophical Society of Manchester, vol. ii. The following etymology is also given, which seems equally well founded, and is as ingenious as either. The Hebrew word or, aur, signifies light, fire, flame ; the Latin terms uro, to burn, and aurum, gold, are derived from it, inasmuch as gold resembles the color of flame ; and hence it is not improbable that orichalcum may be composed of a Hebrew and a Greek term, and that it is rightly rendered flame-colored copper. In confirmation of this, the Latin epithet lucidum, and the Greek one φαεινον, are both applied to orichalcum by the ancients.

ORICUM, or ORICUS; an ancient town of Epirus, with a good harbour, on the Ionian Sea, founded by a colony from Colchis ; called, also, Dardania, because Helenus, the son of Priam, king of Troy or Dardania, reigned in it along with Andromache, after the destruction of Troy.

O'RIENT, *adj. & n. s.* } Fr. *orient* ; Latin
ORIEN'TAL, *adj. & n. s.* } *oriens*. Rising, as
ORIEN'TALISM, } the sun : hence
ORIEN'TALLY, *adv.* } eastern ; bright ;
shining ; the east : oriental is, eastern ; proceeding from, or pertaining to, the east ; and, as a noun-substantive, an inhabitant of that part of the globe : orientalism, an idiom of the east ; an eastern mode of expression.

The liquid drops of tears that you have shed,
Shall come again transformed to *orient* pearl ;
Advantaging their loan with interest,
Oftentimes double gain of happiness. *Shakspeare.*

We have spoken of the cause of *orient* colors in birds ; which is by the fineness of the strainer.

Bacon's Natural History.

Your ships went as well to the pillars of Hercules, as to Paequin upon the *oriental* seas, as far as to the borders of the east Tartary. *Bacon.*

There do breed yearly an innumerable company of gnats, whose property is to fly unto the eye of the lion, as being a bright and *orient* thing. *Abbot.*

Wherefore hath he clothed the trees in cotton, or the fields with flax—wherefore hath he treasured up such *orient* and pleasing colors in grains and fishes, if not for the use and behoof of man ? *Hall.*

Moon, that now meet'st the *orient* sun, now fly'st,
With the fixed stars. *Milton's Paradise Lost.*

In thick shelter of black shades embowered,
He offers to each weary traveller
His *orient* liquor in a crystal glass,
To quench the drouth of Phœbus.

Milton.

Some, ascribing hereto the generation of gold, conceive the bodies to receive some appropriate influence from the sun's ascendant and *oriental* radiations.

Brown.

His revolution being regular, it hath no efficacy peculiar from its *orientality*, but equally disperseth his beams.

Id.

The chiefs about their necks the scutcheons wore, With *orient* pearls and jewels powdered o'er.

Dryden.

They have been of that great use to following ages, as to be imitated by the Arabians and other *orientals*.

Grew.

His victory was that of *orient* light.

When the sun's shafts disperse the gloom of night.

Couper.

ORIFICE, *n. s.* *Fr.* *orifice*; *Lat.* *orificium*; *ab. ore* and *fucio*. The mouth or opening of a wound or perforation.

The prince of Orange, in his first hurt by the Spanish boy, could find no means to staunch the blood, but was fain to have the orifice of the wound stopped by men's thumbs, succeeding one another for the space of two days.

Bacon.

Their mouths

With hideous *orifice* gaped on us wide,

Portending hollow truce.

Milton.

Ætna was bored through the top with a monstrous *orifice*.

Addison.

Blood-letting, Hippocrates saith, should be done with broad lancets or swords, in order to make a large *orifice* by stabbing or pertusion.

Arbutnot.

ORIFLAMB, or **ORIFLAME**. See **AURIFLAMME**.

ORIGANUM, **ORIGANY**, or **marjoram**, a genus of the gymnospermia order, belonging to the didynamia class of plants, and in the natural method ranking under the forty-second order, verticillatæ. There is a strobilus or cone collecting the calyces together. There are sixteen species, mostly natives of Palestine and the east.

O. dictamnus, dittany of Crete. This holds the first rank among the medicinal plants produced in Crete. The praises betowed on its virtues by the ancients are altogether extravagant; yet we, perhaps, treat its medicinal virtues with too much contempt. Its leaf is very balsamic, and its flower diffuses a delicious odor. The inhabitants of Crete apply it with success on various occasions. The leaf, when dried and taken in an infusion with sugar, makes a very pleasant drink. This plant assumes an under-shrubby growth, often with abiding stalks, if it has shelter in winter.

O. heracleoticum, or winter sweet *marjoram*; a finely scented aromatic, excellent for culinary purposes. It is also useful for giving fragrance to ointments, and other medical purposes.

O. marjoranum, or annual sweet *marjoram*, is an aromatic of the highest fragrance, is proper both for the kitchen and pleasure garden, but more particularly for the former. It is often called knotted *marjoram*, from the flowers growing in close knotted-like heads.

O. vulgare, the common wild pot *marjoram*, possesses the same properties with the *heracleoticum*. All these species flower in July and August; the flowers are small, monopetalous, ringent, universally hermaphrodite; and collected into verticilli round the stalks; succeeded by ripe seed in autumn; though in this country the

annual *marjoram* and the three green-house sorts seldom perfect seed well, unless the autumn proves remarkably fine and warm: in default, however, of seed, the propagation of all the perennial sorts, both hardy and green-house kinds, is easily effected by slips of the roots, &c. And the seed of the annual sort is imported plentifully from France and Italy.

ORIGEN, one of the most celebrated ecclesiastical writers of the primitive church, during the third century, was born at Alexandria, A. D. 185, and was surnamed Adamantius, either from his indefatigable application to study, or from the firmness he discovered amidst the torments he suffered for the faith. Leonidas his father trained him with great care, and made him study the Holy Scriptures from his infancy, in which he made surprising progress; and very early manifested a taste for expounding the Scriptures allegorically, which he afterwards carried to great excess. He had afterwards for his instructors in philosophy Ammonius, the celebrated Christian philosopher, and St. Clement of Alexandria. At eighteen years of age he succeeded St. Clement in the office of catechist, an important employment, which consisted in teaching divinity, and expounding the Scriptures. Leonidas his father had suffered martyrdom the year before, during the persecution of Severus in 202; and Origen had shown such eagerness to follow his father to martyrdom, that his mother was obliged to hide his clothes to prevent his going abroad. Origen had a great concourse of auditors who attended his school, some of whom were of the faithful, and others pagan. He confirmed and strengthened the first in their faith, and converted many of the others; and there was such a number of martyrs amongst his disciples, that it might be said that he kept rather a school of martyrdom than of divinity. Taking in a too literal sense what Christ says of becoming voluntary eunuchs, he castrated himself, to prevent his deserving or suffering scandal, as he instructed females in the doctrines of the New Testament. He took a voyage to Rome in 211, in the beginning of Caracalla's reign, and under the pontificate of Zepherinus. After his return he published many works, by which he acquired an extraordinary reputation, that drew to him a great number of auditors. But Demetrius, bishop of Alexandria, conceiving a jealousy of him, endeavoured by various pretences to injure him. At length Origen went to Antioch, whither the empress Mammaea had sent for him to hear him discourse on the Christian religion. He returned to Alexandria, where he continued to teach till the year 228, when he travelled into Achaia and Palestine, and was ordained by the bishops of that province, at forty-two years of age. His being ordained by foreign bishops, without the permission of Demetrius, renewed that prelate's resentment; on which Origen returned to Alexandria, to endeavour to mollify him: but Demetrius drove him thence in 231, and caused him to be excommunicated, and even deposed, in a council held at Egypt. Origen then returned to Cæsarea in Palestine, where he raised a celebrated school, and had St. Gregory Thaumaturgus, and a great number of illustrious persons

among his disciples. He afterwards travelled to Athens; and, at the desire of Firmilianus, staid some time at Cæsarea in Cappadocia; whence he was invited into Arabia. Under the seventh persecution of the Christians, in the reign of Decius, none were used with greater severity than Origen; but he supported with incredible constancy the dreadful torments which his persecutors invented against him. He died at Tyre in 254, aged sixty-nine. He was the author of a great number of excellent works. The principal of those extant are, 1. A Treatise against Celsus; 2. A number of Homilies, with Commentaries on the Holy Scriptures; 3. Philocalia, and several other treatises; 4. Fragments of his Hexapla, collected by father Montfaucon, 2 vols. folio. Of all Origen's books, the loss of his Hexapla is most to be regretted. This work was thus named from its containing six columns; in the first of which was the Hebrew text of the Bible; in the second the same text in Greek characters; in the third the Greek version of the Septuagint; in the fourth that of Aquila; in the fifth that of Symmachus; and in the sixth that of Theodotion. This admirable book gave the first hint for our Polyglot Bibles. 5. The book of Principia, of which we have only an incorrect Latin version. In all his writings he discovers modesty, candor, and humility; a noble and sublime genius, profound learning, and great erudition. He wrote with so much ease that he is said to have dictated to seven or eight amanuenses at a time.

ORIGENIANI, or ORIGENIANS, ancient heretics, who even surpassed the abominations of the Gnostics. Epiphanius speaks of them as subsisting in his time; but their numbers, he says, were inconsiderable. He fixes their rise about the time of the great Origen; but distinguishes them from the Origenisti, whom he derives from Origen Adamantius. And St. Augustine expressly asserts that it was another Origen. Their doctrines were shameful: they rejected marriage; they used several apocryphal books, as the Acts of St. Andrew, &c., and endeavoured to excuse their open vices by saying that the Catholics did the same in private.

ORIGENISTI, in church history, a Christian sect in the fourth century, so called from their asserting that they derived their opinions from the writings of Origen. The Origenisti maintained, that the souls of men had a pre-existent state; that they were holy intelligences, and had sinned in heaven before the body was created; that Christ is only the son of God by adoption; that he has been successively united with all the angelical natures, and has been a cherub, a seraph, and all the celestial virtues one after another; that in future ages he will be crucified for the salvation of the devils, as he has already been for that of men; and that their punishment, and that of the damned, will continue only for a certain limited time.

ORIGIN, n. s.

ORIG'INAL, n. s. & adj.

ORIG'INALLY, adv.

ORIG'INALNESS, n. s.

ORIG'INARY, adj.

ORIG'INATE, v. a. & v. n.

ORIGINA'TION, n. s.

French *origine*;

Lat. *origo, origin-*

alis; ab *orior*,

to rise, or spring.

Beginning; spring

head; source;

commencement of

existence; first state of existence; derivation; descent. Both origin and original are used in all the above senses; original further means first copy or language in which any thing is written; archetype; and, as an adjective, primitive; first; primary: originally is primarily; having regard to the first cause or author; at first: originary is productive; causing existence; primitive: to originate, to bring into existence; and (unusually) to take existence: origination is the act or mode of production; descent.

Remember I am built of clay, and must

Resolve to my *originary* dust. *Sandys on Job.*

Nature, which contemns its *origin*,

Cannot be bordered certain in itself.

Shakespeare.

A very great difference between a king that holdeth his crown by a willing act of estates, and one that holdeth it *originally* by the law of nature and descent of blood. *Bacon.*

The tradition of the *origination* of mankind seems to be universal; but the particular methods of that *origination* excoagitated by the heathen were particular. *Hale.*

For what *originally* others writ

May be so well disguised, and so improved,

That with some justice it may pass for yours.

Roscommon.

As God is *originally* holy in himself, so he might communicate his sanctity to the sons of men, whom he intended to bring into the fruition of himself.

Pearson.

The Greek word used by the apostles to express the church signifieth a calling forth, if we look upon the *origination*. *Id.*

The *original* question was, whether God hath forbidden the giving any worship to himself by an image? *Stillingfleet.*

They, like the seed from which they sprung, accursed,

Against the gods immortal hatred nurst;

An impious, arrogant, and cruel brood,

Expressing their *original* from blood. *Dryden.*

External material things, as the objects of sensation; and the operation of our minds within, as the objects of reflection; are the only *originals* from whence all our ideas take their beginnings.

Locke.

This eruca is propagated by animal parents, to wit, butterflies, after the common *origination* of all caterpillars. *Ray.*

Some philosophers have placed the *original* of power in admiration, either of surpassing form, great valour, or superior understanding. *Davenant.*

Had Adam obeyed God, his *original* perfection, the knowledge and ability God at first gave him, would still have continued. *Wake.*

A present blessing upon our fasts, is neither *originally* due from God's justice, nor becomes due to us from his veracity. *Smallridge.*

The sacred historian only treats of the *origin* of terrestrial animals. *Bentley's Sermons.*

Compare this translation with the *original*, the three first stanzas are rendered almost word for word, not only with the same elegance, but with the same turn of expression. *Addison.*

You still, fair mother, in your offspring trace
The stock of beauty destined for the race;
Kind nature forming them, the pattern took
From heaven's first work, and Eve's *original* look.

Prior.

Original of beings! power divine!
Ince that I live and that I think, is thine. *Id.*

These great orbs,

Primitive founts, and *origins* of light. *Id.*

The metallic and mineral matter, found in the perpendicular intervals of the strata, was *originally* and at the time of the deluge, lodged in the bodies of those strata. *Woodward.*

If any station upon earth be honourable, theirs was; and their posterity therefore have no reason to blush at the memory of such an *original*. *Atterbury.*

The production of animals in the *originary* way, requires a certain degree of warmth, which proceeds from the sun's influence. *Cheyne.*

The merit of these is the inveterate likeness, all stiff and awkward as the *originals*, and like nothing in human nature besides. *Sheridan.*

ORIGINAL SIN. See THEOLOGY.

ORIGNY (Anthony John Baptist Abraham d'), born in 1734 at Rheims, was counsellor of the mint, and member of many provincial academies. He died in October, 1798, having published *Dictionnaire des Origines, ou Epoches des Inventions, Decouvertes, &c.* Paris, 1776, 1778, 6 vols. 8vo.; *Abrégé de l'Histoire du Théâtre Français*, tome quatrième, 1783, in continuation of a work by Moubly; and *Annales du Théâtre Italien*, 1788, 3 vols. 8vo.

ORIGNY (Peter Adam d'), was also a native of Rheims, and died there September 9th, 1774. In the early part of his life he became a captain of grenadiers; but having been disabled by a wound at the attack of the lines of Weissembourg, he retired from the service with a pension. He was the author of *L'Egypte Ancienne, ou Mémoires Historiques et Critiques sur les Objets les plus Importans du Grand Empire des Egyptiens*, 1762, 2 vols. 12mo.; and another on *Egyptian Chronology*: at the time of his death he was occupied in more extended researches relating to this subject.

ORIHUELA, a large well-built town of Spain, near the north-east of the province, and in the Huerta, or plain of Murcia, on both sides of the Segula. It is situated at the foot of a mountain, at the entrance of a beautiful country, but the town is narrow, though of considerable length. Its streets are in general airy and straight but, instead of pavement, they are covered with sand, which is removed from time to time. Some of the widest only have a raised pavement on each side. The town contains five small squares, but the houses here are indifferent. There are two bridges over the river, the water of which is used for culinary purposes. The public edifices have nothing to attract attention; except that the grating of the high altar of the cathedral is considered a master piece. An episcopal see was founded here in the fifteenth century; and the town contains, besides the cathedral, four churches, nine monasteries, three convents, a poor house, and hospitals for the sick, and for orphans. There is also a small university, and two foundation schools. The manufactures carried on here—namely, silk spinning, distilling of brandy, and some saltpetre works—are all on a small scale. The employment of the majority of the inhabitants, about 20,000, is derived from the cultivation of the neighbouring country, which resembles a succession of fruit gardens of various kinds, such as orange, lemon, almond,

pomegranate, and mulberry trees. The corn fields are also so productive that it has become a proverb in Spain, 'rain or no rain, there is always corn at Orihuele.' This city was in the possession of the Moors 550 years; in 1264 they lost it to the Arragonese; it was laid waste by the plague in 1648; and in 1651 a great part of it was destroyed by an extraordinary rise of the river. In 1706 it was taken by Belluga, the bishop of Murcia, who gave it up to pillage. It was the Orclis of the Romans, the Orzuella of the Goths; the Orguella of the Moors; whence the Orihuele of modern Spaniards. Twelve miles north-east of Murcia.

ORILLON, in fortification, is a small rounding of earth, faced with a wall; raised on the shoulder of those bastions that have casemates, to cover the cannon in the retired flank, and prevent their being dismounted by the enemy. See FORTIFICATION.

ORINOCO, an immense river of South America, the source of which has never been perfectly ascertained. Humboldt wishing to penetrate in 1800 was prevented by a nation of warlike savages. He was obliged, therefore, to trust to the natives for all his information on this point. According to La Cruz, it rises in a small lake called Ipava, in 55° N. lat., and turning round thence enters the lake of Parima to the south-east, whence it issues by two outlets, and afterwards turning holds a circular northerly course, when, being joined by the numerous large streams from the eastern Andes, it is swelled to an immense size. Here a junction is formed between this river and its great rival the Amazon, by means of the Rio Negro and Cassiquari. This was first ascertained by M. Humboldt, who entered the Orinoco by the Cassiquari, in 3° 30' N. lat., and mounted the current of the great river as far as Esmeraldas, the last Spanish settlement in that quarter. The whole country for 300 miles was a complete desert, in which the ants and mosquitoes were so troublesome as almost to deter him from proceeding. On its southern or left bank this river receives the Maquiritari, the Cunucunuma, Ventuari, Caura, Aruy, and Caroni; and from its northern, or rather its western or right bank, it receives still more important accessions from the Cassiquari, Guariari, the Meta, and the Apure, with their tributary streams which often equal the main river. After being enlarged with these vast additions to its stream, it turns eastward, and pursues its course to the ocean.

Including the windings its length is estimated at 1380 miles; at 200 leagues from the sea it has a breadth of from 2500 to 3000 fathoms, without the interruption of a single isle: its breadth before St. Thomas's is 3850 fathoms, and its depth at the same place in March, when its waters are at the lowest, has been found to be sixty-five fathoms.

The Delta of the Orinoco commences about 100 miles from the coast; and, like all the other rivers which roll a vast body of water over a flat country, it makes its way into the ocean by an innumerable variety of channels. The inundation during the highest flood is calculated to extend on each side from eighty to ninety miles.

It is computed that the river has fifty outlets into the ocean, only seven of which are navigable, and these not for vessels of any great burden. The Guayanos Indians, although born on the islands, and accustomed to the intricacies of the different channels, yet frequently lose themselves here, and are obliged to allow the current to carry them out to sea, and then to re-enter, after the most minute observations to ascertain the proper passage. It even requires great skill to find the current. The grand mouth is formed by Cape Barima to S. S. E. which is in $8^{\circ} 54' N.$ lat., and the island of Cangrejos, twenty-five miles off, lying W. N. W. of the cape: the breadth of the navigable part of this passage is not quite three. The depth of water on the bar, which lies a little farther out to sea than the cape, is at ebb seventeen feet. On passing the bar, the depth on the side of the island is four or six fathoms, whilst on the side of the cape it is not more than one fathom and a half. The flats extend from Cangrejos seven leagues into the sea, but from Cape Barima not more than two leagues.

The banks of the Orinoco are described as magnificent. Forests filled with aromatic trees extend on every side; birds of all varieties of song and plumage are every where observed, and hordes of monkeys. In other places enormous plains extend their verdure further than the eye can reach, and the cataracts of the Orinoco give their name to the whole Cordillera; but no good description of these falls has yet been given. They are situated at Maypura and Atures, two villages in about $6^{\circ} N.$ lat. The river throughout abounds with fish and amphibious animals; among which the alligator is conspicuous. The annual swell of the Orinoco commences in April and ends in August. All the month of September it remains with the vast body of water which it has acquired the five preceding months: about 1300 miles from the ocean the rise is thirteen fathoms. In February it is at its lowest ebb. The mouth of the great estuary is in long. $59^{\circ} 50' W.$, and lat. $8^{\circ} 30' N.$

ORIOLE or **ORIOLEUS**, in ornithology, a genus belonging to the order of *picæ*. The bill in this genus is straight, conic, very sharp pointed; edges cultrated, inclining inwards; mandibles of equal length. Nostrils small, placed at the base of the bill, and partly covered: tongue divided at the end: toes, three forward, one backward; the middle joined near the base to the utmost one. These birds, mostly inhabitants of America, are a noisy, gregarious, frugivorous, granivorous, and voracious race, very numerous, and often building pensile nests. The several species, which are very numerous (for Latham enumerates and describes forty-five), are chiefly distinguished by their color.

O. acuta cauda, the sharp-tailed oriole, is about the size of a lark: the bill is dusky; the crown is brown and cinereous: the cheeks are brown, bounded above and below with deep dull yellow. The throat is white; the breast, sides, thighs, and vent, are a dull pale yellow, spotted with brown; the belly is white; the back is varied with ash-color, black, and white; the wing-coverts are dusky, with ferruginous edges. The quills are also

dusky; the tail consists of narrow sharp-pointed feathers, of a dusky color, tinged with olive, and obscurely barred; and the legs are pale brown.

O. Baltimore, of Linnæus, the Baltimore bird of Catesby and Latham, le Baltimore of Buffon, and the Baltimore oriole of Pennant, is an inhabitant of North America; which it quits before winter, and probably retires to Mexico, the xochitoll of Fernandez seeming to be of the same species. The head, throat, neck, and upper part of the back of the male, are black; the less coverts of the wings orange; the greater black, tipped with white; the breast, belly, lower part of the back, and coverts of the tail, of a bright orange; the primaries dusky, edged with white; the two middle feathers of the tail black; the lower part of the same color, the remaining part orange; and the legs black. The head and back of the female are orange, edged with pale brown; the coverts of the wings of the same color, marked with a single bar of white; the under side of the body and coverts of the tail yellow; the tail dusky, edged with yellow. The length both of the male and female is seven inches. This species suspend their nests to the horizontal forks of the tulip and poplar trees, formed of the filaments of some tough plants curiously woven, mixed with wool, and lined with hairs. The nest is of a pear shape, open at top, with a hole on the side through which the young discharge their excrements, and are fed. In some parts of North America, this species, from its brilliant color, is called the fiery hang-nest. It is named the Baltimore bird from its colors resembling those in the arms of lord Baltimore, whose family were proprietors of Maryland. There are several other species of orioles, all inhabitants of North America. These, according to Mr. Pennant, are the white-backed, the bastard, the black, the brown-headed, the rusty, the white-headed, the Hudsonian white-headed, the olive, the yellow-throated, the Unalaschka, and the red-wing. This last species, in America, is named the red-winged starling, and the swamp black-bird. Although they appear at New York only from April to October, they probably continue through the whole year in the southern parts. They are seen at times in such prodigious flocks as even to obscure the sky. They were esteemed the pest of the colonies, making most dreadful havoc among the maize and other grain, both when new sown and when ripe. They are very bold, and not to be terrified by a gun; for, after the sportsman makes slaughter in a flock, the remainder will take a short flight, and settle again in the same field. The farmers sometimes attempt their destruction, by steeping the maize, before they sow it, in a decoction of white hellebore. This potion is particularly aimed at the purple jackdaws, which consort in myriads with this species. But these seemingly destructive birds are not formed in vain. Notwithstanding they cause such havoc among the grain, they make ample recompense, by clearing the ground of the noxious worms with which it abounds; particularly the bruchus pisi, or peas beetle. There is another variety of this species, called the bastard Baltimore: its size is nearly that of the true Baltimore, but it measures somewhat less in length: the bill is

lead-colored; the forehead and cheeks black mixed with yellow: the hind head and nape are olive gray, marked with a few spots of black; the upper part of the back is the same, but somewhat duller; the lower part of the back, the rump, fore part of the neck, breast, belly, sides, thighs, upper and lower tail-coverts, and under the wings, are orange-yellow, but brightest on the breast and tail-coverts; the less wing-coverts are deep brown; the greater are the same, tipped with dirty yellowish white: the quills are brown, bordered on both edges with white; the two middle tail feathers are olive, then blackish, marked at the end with a longitudinal yellowish spot; the next on each side are olive and black, confusedly mixed; and the four outer ones are of a yellowish olive: the legs and claws are bluish. They inhabit North America. There seems to be great confusion and uncertainty as to the true and bastard *Baltimores* and their females; perhaps they are only varieties of one species referable to one or other sex of the true *Baltimore*, in the different stages of growth.

ORION, in astronomy, one of the constellations of the southern hemisphere. The ancients placed it near the feet of the bull. It was composed of seventeen stars in the form of a man holding a sword; for which reason the poets often speak of Orion's sword. As the constellation of Orion, which rises about the ninth day of March, and sets about the 21st of June, is generally supposed to be accompanied at its rising with great rains and storms, it has the epithet of *aquosus* given it by Virgil. The name is formed from the Greek *ὤρεω*, to produce water: the ancients supposing that it occasioned floods at its rising and setting. See *ASTRONOMY*.

ORION, in mythology, was the son of Jupiter, Neptune, and Mercury. For, as these gods were visiting the earth, they entered the house of Hyrieus, a native of Tanagra, in Boeotia, as benighted travellers, he being famed for hospitality to strangers. Hyrieus treated them generously, and even killed an ox, the only one he had, for their entertainment. This liberality so pleased the gods that they bid him request any favor he would at their hands, and he should receive it. Hyrieus answered that having no children these were what he chiefly desired, and soon after says Hyginus, 'Mercurius de tauro quem Hyrieus immolaret, corium pertulit. Illi (i. e. Jupiter, Neptune, and Mercury) in eum urinam fecerunt et in terram obruerant unde natus est. Ourion afterwards, to obliterate the memory of his birth, changed the first letter of his name and called himself Orion. Soon afterwards he became conspicuous; and Diana took him among her attendants, and became deeply enamored of him. His gigantic stature, however, displeased Enopion king of Chios, whose daughter Hero or Merope he requested in marriage. The king, not willing to deny him openly, promised to make him his son-in-law as soon as he delivered his island from wild beasts. This task, which Enopion supposed to be impracticable, was soon performed by Orion, who demanded his reward. Enopion, on pretence of complying, intoxicated his illustrious guest, and put out his eyes on the sea-shore, where he had laid himself

down to sleep. Orion found himself blind when he awoke. He went, directed by the sound, to a neighbouring forge, where he placed one of the workmen on his back, and by his directions went to a place where the rising sun was seen with the greatest advantage. Here he turned his face towards the luminary, recovered his eye-sight, and hastened to punish the perfidious cruelty of Enopion. Orion was an excellent workman in iron, and fabricated a subterraneous palace for Vulcan. Aurora, whom Venus had inspired with love, carried him away into the island of Delos, that she might enjoy his company; but Diana, who was jealous of this, killed him with her arrows. Some say, that Orion had provoked Diana's resentment, by offering violence to Opis, one of her female attendants; or, as others say, because he had attempted the virtue of the goddess herself. Perhaps the fable denotes that Orion was an astronomer, who lost his sight, and at last his life by studying the moon and stars in cold nights. According to Ovid, Orion died of the bite of a scorpion, which Terra produced to punish his vanity, in boasting that no animal on earth could conquer him. Some say that Orion was son of Neptune and Euryle, and that he received from his father the privilege and power of walking over the sea without wetting his feet. Others assert that he was a son of Terra, like the rest of the giants. He had married a nymph called Sina, before his connexion with the family of Enopion; but Sida was the cause of her own death, by boasting herself fairer than Juno. Diodorus says that Orion was a celebrated hunter, superior to the rest of mankind, by his strength and uncommon stature. He built the port of Zancle, and fortified the coast of Sicily against the inundations of the sea, by heaping a mountain of earth called Pelorum, on which he built a temple to the gods of the sea. After death Orion was placed in heaven, and changed into a constellation. Orion was buried in the island of Delos; and the monument which the people of Tanagra in Boeotia showed, as containing his remains, was a Cœnotaph. The daughters of Orion distinguished themselves as much as their father; and, when the oracle had declared that Boeotia should not be delivered from a dreadful pestilence before two of Jupiter's children were immolated on the altars, they voluntarily sacrificed themselves for the good of the country. Their names were Menippe and Merioche. They had been carefully educated by Diana; and Venus and Minerva had made them rich and valuable presents. The infernal deities were struck at the patriotism of these two females; and instantly two stars arose from the earth, which still smoked with their blood, and were placed in the heavens in the form of a crown. According to Ovid, their bodies were burned by the Thebans, and from their ashes arose two persons, whom the gods soon after changed into constellations.

ORISSA, or UDDessa, an important province of the Deccan, Hindostan, extending from 16° to 23° of N. lat. To the north it is bounded by Bengal; to the south by the Godavery; on the east it has the Bay of Bengal; and on the west the province of Gundwana. In length, from north-east to south-west, it may be

estimated at 530 miles, by ninety the average breadth.

In 1592 Orissa was divided into five districts, viz. Jellasir, comprising Midnapoor, and the British possessions lying north and east of the river Subunreeka; 2. Buddruck (now Cuttack); 3. Cuttack; 4. Kulling, or Cicacole; 5. Rajamundry. Besides this territory on the sea-coast, Orissa also comprehended an unproductive region on the western frontier, making part of the Jeharcund, or Jungly country, with the districts of Ruttenpoor and Sumhullpoor: but the two latter properly belong to Gundwana. The modern subdivisions of this province are, Cicacole, Rajamundry, Cuttack, Mohurbunge, Midnapoor, and Konjeur. The interior of the province still remains in a savage state, being composed of rugged hills and uninhabited jungles, surrounded by deserts and forests, pervaded by a pestilential atmosphere. It forms a strong natural barrier to the maritime districts, being only traversed during the driest season from February to May by the Lumballies, or inland carriers; and there are only two passes properly explored, in the whole length of the great ridge, extending from the Godavery to the Mahanuddy: the one direct from Chandah to Cicacole; the other oblique from Choteesghur by the way of Kalahindi; both uniting at the pass of Saloor, or Saureacca. By this pass, during the French possession of the northern Circars in 1754, a body of Mahrattas were introduced; more than half of whom perished from the noxious air of the hills. The chief rivers are the Godavery, the Mahanuddy, the Byturnee, and the Subunreeka, besides innumerable mountain streams. Although, as compared with Bengal, Orissa may be generally described as a barren province, yet the maritime part equals in fertility any territory in the Carnatic; and the district of Midnapoor is excelled by few in Bengal. The country between the Gaintee and Bamoni is one of the finest parts of the province, and is inhabited by a considerable number of weavers of coarse muslins for turbans, &c. The best bamboos used for palanquins come from the purgunnahs of Tolchan and Hindole.

In the back parts of this province, beyond the British dominion, the native Ooreas are a fierce people, commonly armed with bows and arrows, or swords; the latter being generally carried naked. They are broad at the end, but narrow in the middle. These people have a rooted antipathy to the Mahrattas. The language of this province, and the character in which it is written, are both called Ooreeah. This was formerly an independent Hindoo kingdom, governed by a dynasty of princes of the race of Gujaputty, who, in 1592, were conquered by Mansingh, the emperor Acber's vicaroy in Bengal, to which dominion it was then annexed. It then measured along the sea coast nearly 600 miles, by forty the medium breadth, stretching to the hills westward, and contained the nation of the Ooreas, a distinct race of Hindoos, differing in language, manners, and some peculiarities of religion, from the other Brahminical sects of Hindostan. From the accounts of ancient European travellers, fragments of national history, and a few remnants of former splendor, it was probably a flourishing

country before the Mahommedan invasion; but soon after fell into a state of comparative depression. It does not appear, however, that the Mahommedans ever completely occupied or colonised this province, which still remains one of those in which the Hindoo manners are preserved in their greatest purity. The temple of Juggernaut is famous for its antiquity, sanctity, and the great annual resort of pilgrims. After the expulsion of the Afghauns from Bengal, during the reign of the emperor Acber, they retreated into Orissa, and retained possession of the maritime and more fertile portions of it, and also of the Juggernaut temple for many years.

No province of India exhibits a greater difference, with respect to the proportion of inhabitants. Midnapoor, which comprehends less than 7000 square miles, has been found, by enumeration, to contain a million and a half of souls; yet it is probable the population of the whole province does not exceed four millions and a half. Three-fourths of this extensive territory are possessed by the British, the remainder by various petty native chiefs in a state of perpetual hostility with each other.

ORISON, *n. s.* *Fr. oraison.* See ORAISON. A prayer; oral supplication.

The ORKNEY ISLANDS, the Orcaides of the Romans, are separated from the north-east extremity of Scotland by the Pentland Frith, which is between ten and eleven miles broad. They are about thirty in number; but many are uninhabited, being small, and producing only sheep pasture. The principal inhabited islands are Pomona or Mainland, Hoy, North Ronaldshay, South Ronaldshay, Sanday, Stronsay, Eday, Westray, Shapinshay, Eglishay, Græmsay, Rousay, Weir, Enhallow, Papa Westray, Papa Stronsay, Burray, &c. The small uninhabited islands are often denominated holms; and the sharp and rugged rocks, overflowed at high water, and with scarcely any soil on them for the production of vegetables, are called skerries. The forms of the islands are very irregular, and their dimensions very different, some not exceeding a mile in length; whereas the Mainland extends to nearly twenty-five. They are disjoined from one another by sounds or friths, from one to five miles broad, having exceedingly rapid and dangerous currents; the whole extending from the south-west to north-east, the distance not less than seventy miles, and upwards of forty in breadth. The east and north coasts are in general low; the western more elevated, terminating in bold and steep cliffs. From similar appearances on the opposite coasts, many have concluded that they were formerly joined to the mainland of Great Britain. Near the small island Swinna are two great whirlpools, called the wells of Swinna, which are particularly dangerous in a calm.

Mainland or Pomona, the grand island of the archipelago, and occupying its centre, is eight leagues long and one to three broad, but so deeply indented by bays that these dimensions give no accurate idea of its surface. Though very hilly, it has a considerable portion of fertile land, and on it are the two towns of the islands, Kirkwall and Stromness: the former is the chief place,

and is on a bay of the north coast, forming a good haven; it consists of about 300 neat houses, inhabited by the chief persons of the island, besides shop-keepers and tradesmen. Here is a vast cathedral dedicated to St. Magnus, and the ruins of the bishop's palace. Stromness, on the west side of the island, has recently risen from a poor hamlet to a thriving town, and almost vies with Kirkwall; its haven is entered by 200 to 300 vessels a year, caught in foul winds in the Pentland Frith.

The following are the inhabited islands south of Mainland. 1. South Ronaldsay, two leagues long and one broad, 1600 inhabitants, is one of the most fertile, and has a good harbour on the north. 2. Burray, separated from the preceding island by a strait two miles broad, is only five or six miles in circuit, but produces potatoes, carrots, and other garden vegetables, in greater perfection than the other islands. 3. Hoy, the highest land of the islands, is three leagues long and two broad, but at high water is nearly divided into two islands. On the north is a hill 1600 yards high called the Warth or Ward of Hoy, and at its foot in a dark glen is the greatest curiosity of the island, a hermitage cut out of a solid block of freestone, thirty-eight feet long, eighteen broad, and nine thick, and which seems to have tumbled from the hill. This island chiefly pastures sheep; its population is 1400; it has three good harbours, of which that named Longhope is much frequented by vessels for shelter. West of Hoy is a stupendous rock called the Old Man of Hoy, 1500 feet high, and resembling the ruins of an immense building. 4. Flotay, noted for its good road for ships, named Panhope, and also for its abundance of moor game. It has 200 inhabitants.

The smaller islands south of Mainland are Græmsay, one mile and a half from Stromness, three miles in circuit. It is in great part composed of schistus, and has 180 inhabitants. Teraay pastures some sheep. Sinthay and Lamau; Cavay has only three families, and Lamholm, only one.

The islands north of Mainland are Shapinsay, tolerably fertile, has 750 inhabitants; Stronsay, two leagues long and one broad, has two good harbours, 900 inhabitants. Papa Stronsay is a little pleasant island off the north end of Stronsay. Eday, five miles long and two broad, abounds in peat which it supplies to the other islands; great numbers of lobsters are taken round it: population 600. It has two good harbours. Sanday, four leagues long and one broad, is one of the most populous and the richest of the archipelago, making 500 tons of kelp a year; it has two good harbours. Westray, two leagues long and one broad, has abundance of pastures and peat; 1400 inhabitants. Papa Westray, north-east of the preceding, is a pleasant island with a little lake of fresh water; on it are the ruins of two buildings, supposed to have been druidical temples. It has 200 inhabitants.

Faray is one of the most level of the islands, and is clothed with grass. Eaglesay, two miles long, was accounted so much superior to the other islands, that it was the residence of the bishops and earls of Orkney; it is also noted for the murder of St. Magnus; it has 200 inhabitants.

Roussay, two leagues long and one broad, is one of the most rugged of the islands; it has 700 inhabitants. North Ronaldsay, three miles long and one broad, is one of the most level islands; it has 420 inhabitants. Weir, 150 inhabitants; Enhallon; Gairsay, a conical hill, fifty inhabitants; Domsay, a fine little island a mile in circuit, before the bay of Kirkwall, has but one family.

Copihslay, east of Mainland, is a noted mark for seamen; it has but two or three families.

Fair Island lies between the Orkneys and Zetland, and has a little haven.

The commerce of the Orkney Islands consists in the export of beef, pork, tallow, hides, linen, yarn, coarse linen, feathers, and especially kelp, to the amount of 2500 tons. The imports besides luxuries are coals. The following is a statement of the trade in several years:—

| | £. | Vessels. | Tons. | Men. |
|--------------|--------|----------|-------|------|
| 1770 Exports | 12,018 | 17 | 825 | 76 |
| Imports | 10,406 | | | |
| Balance | 1,612 | | | |
| 1780 Exports | 23,247 | 20 | 940 | 90 |
| Imports | 14,011 | | | |
| Balance | 9,276 | | | |
| 1790 Exports | 26,596 | 33 | 2000 | 170 |
| Imports | 20,803 | | | |
| Balance | 5,793 | | | |
| 1800 Exports | 39,677 | 21 | 1375 | 119 |
| Imports | 35,789 | | | |
| Balance | 4,888 | | | |

The fisheries of the Orkneys are neglected, except that of lobsters.

All the islands have been said to contain about 384,000 acres, divided in the following proportions; viz. heath and moss, occupied as common 294,000 acres; green pastures occupied as common 30,000; in field pasture and meadow, 30,000; arable, including gardens, 24,000; total productive land, 84,000; houses, roads, walls, ditches, 2000; fresh water, 4000. The old system of agriculture prevails; nevertheless the county does more than support its inhabitants. Husbandry is in a very backward state. The plough used is the single stilted one, though the double stilted one is gradually coming into use. The plan of husbandry is to till very shallow, and to harrow sparingly, as the farmer relies more on the quantity of manure for raising a good crop. The manure is almost solely the sea-weed drifted ashore. Fallowing is rarely used, and a proper rotation of crops never followed. Black oats are sown in the end of March, or the beginning of April; and bigg or bear from the 1st to the 20th of May. The summer is chiefly employed in preparing turf and peat for fuel. The crop is reaped from the 20th of August to the end of September; if it should remain after that time it is lost, in the violent gales and storms which generally succeed. There is scarcely a tree or shrub to be seen; and, although several experiments have been tried to raise trees, they have failed; but the hills are

well clothed with beath, and the valleys are variegated with a profusion of beautiful herbs. The whole district is well supplied with lakes and rivulets, which yield delicious trout and salmon; turn mills, &c.

Rain falls in considerable quantity through the islands. Snow generally comes from the north-west and south-east. About the middle of June, a cold wind, accompanied with snow and hail showers, often blows from the north about two or three weeks, and checks the progress of vegetation. When this is past the wind changes, and warm showers succeed. Thunder and lightning are most common in winter. The *auroa borealis* is more frequent and more splendid in this than in most other regions. In summer the inhabitants can distinctly see to read at midnight; but in December and January the days are, on the other hand, proportionably short. During this season very little work is done; and it is then that the neighbouring farmers enjoy their convivial pleasures. On the coast, the small farmers employ themselves in fishing during the winter months, and in the summer in the making of kelp.

The land animals are small horses, cattle, sheep, swine, and rabbits. Of these the sheep are the most numerous, there being upwards of 50,000 in the islands, and, within the last twenty years, a far greater degree of attention has been paid than formerly to the breeding them. The domesticated fowls are as common here as in other parts of Scotland, and the heaths abound with snipes, red grouse, and plovers. The other wild fowl are large eagles of various kinds; wild geese and ducks in great variety, herons, hawks, gulls, solan geese or gannets, swans, &c. The eagles make much havoc among the lambs, so that, by law, he that kills an eagle is entitled to a hen from every house in the parish where it was killed. The half-tide rocks swarm with seals; sea otters are very common; the friths are occasionally visited by whales, and by great herds of grampuses. Cod, ling, haddock, and flat-fish are abundant in the surrounding seas. Coal-fish, under the names of sillocks, cooths, and sethes, form much of the food of the people. Shoals of herrings used formerly to frequent the bays; but they have disappeared for some years. On the shores are found a variety of sponges, corals, and corallines; large oysters, mussels, cockles, &c. Ambergris and spermaceti are sometimes thrown ashore; but the greatest curiosity which the sea brings to these islands are the large *Molucca* or Orkney beans, all of American or West Indian origin, being conveyed across the Atlantic by the gulf-stream. The seeds of the *mimosa scandens* are the most common.

The coarse woollen manufacture of cloth, stockings, and blankets, has of late been less attended to than formerly; and, instead of it, that of linen yarn and linen cloth was introduced about the year 1747, and is in a flourishing state; but kelp is still the staple commodity.

It has been asserted that the Orkneys, as well as the hills of Shetland, were originally peopled from Norway, in the ninth, tenth, or eleventh century. Others imagine that the Picts were the original inhabitants, and call Orkney the an-

cient kingdom of the Picts. Certain singular houses, now overgrown with earth, are called Picts Houses; and the Pentland frith (formerly Pightland, or Pictland) evidently retains their name. Claudian's line, cited by Camden, proves that the Picts, with some other German colony, particularly the Saxons, were then in possession of these isles; and so Ninnius expressly says. Many of the inhabitants used, until of late years, the Norse language, which differs but little from the Teutonic. The English language, with a Norwegian accent, is now that of these islands; but the appearance of the people, in their manners and genius, evidently show their northern origin.

The best and in all probability the most authentic account we have of this early part of the history of the Orkneys is from Torsæus. According to this writer, during the reign of Gregory the Great, when by his policy the Picts were driven from other parts of Scotland, they came to the Orkades, but did not meet with a favorable reception, for many of them migrated to Shetland, and thence to Norway. These islands were at various times harassed and plundered by adventurers from Scandinavia; and the Norwegian princes often laid the inhabitants under tribute. The Christian religion was transported to the Orkneys from Norway, in the beginning of the eleventh century, when Sigurdus possessed the entire dominion of these isles. About this time he married a daughter of Malcolm III., by whom he had a son named Torphinus, who succeeded him. He defeated Ronald, a grandson of Sigurdus, who had lived in Norway, and who was esteemed the rightful heir to the earldom of Orkney, after he had made a successful descent. He established salutary laws, and encouraged the arts of industry. Torphinus built a sumptuous church in Byrsa, where the first bishops of Orkney resided, and to which he retired in the decline of his life, and was interred in it, on his death at an advanced age. He left two sons, Paul and Erland, who amicably shared in the government of their father's extensive domain. During this period the northern counties are said to have arrived at a very superior degree of cultivation and improvement, which became equally conspicuous in the richness of their lands and in the mildness of their disposition. Their sons, however, did not both inherit their father's virtues. Magnus, the son of Erland, was pious and peaceable: a great promoter of religion, and anxious in patronising the establishment of Christianity: but Hacon, the heir of Paul, was vehement, wild, and impatient of restraint. He saw how Magnus was revered, envy drove him to revenge, and having, by the most deliberate villany, got Magnus into his power, he murdered him. The latter part of his life was spent in penitence, and in improving his dominions. Magnus's singular piety, and his unfortunate death, were so well represented at Rome that he was canonised. Harquin had two sons, Paul the Silent, and Harold the Orator. Harold succeeded in Caithness, and the Orkneys were governed by Paul. Ronald, a descendant of St. Magnus, an elegant and accomplished youth, appeared at the court of Norway, and was supported

in his claim upon the Orkneys, as the heir of the canonised martyr. He sent messengers to Paul and offered to share the government with him; but this proposal was refused. By a very artful manœuvre, however, Ronald obtained his purpose, and shared his sovereignty with Harold, the heir of Paul. They lived amicably together till Ronald was at last assassinated by a proud chieftain; and Harold possessed the unrivalled sovereignty of the north for a long period.

In 1196 he was able to bring 7000 men to the field, and a body of cavalry, against the army of William, king of Scotland, but was defeated. In 1197 the Caithnessians rebelled, headed by one Roderic, and Torphinus, son of Harold. The king met and defeated them near Inverness. Roderick was slain: and William, seizing on Harold in the extremity of Caithness, detained him till Torphinus surrendered himself as an hostage; but, on some new treasons of the father, the king caused the eyes of the unhappy youth to be put out; and had him emasculated, of which he soon died in prison. Harold died in the seventy-third year of his age; and with him ended the independent sovereignty of the north of Scotland. The Norwegians seem to have been in possession of these isles as late as 1266; for then Magnus IV., king of Norway, being worsted in war with the Scots, yielded them to Alexander III., king of Scotland, by treaty, and Haquin, king of Norway, confirmed the possession of them to king Robert Bruce in 1312. Lastly, in 1464, Christian I., king of Norway and Denmark, when he gave his daughter in marriage to James III., king of Scotland, transferred all his right to them, to his son-in-law, and his successors; to make which more binding, the pope's confirmation was obtained. Magnus sold them to Alexander for 4000 merks sterling, and a yearly acknowledgment of 100 merks. The Danes, however, had pretensions to the Orkneys, which were not totally abandoned, until James VI. marrying Anne, daughter of the king of Denmark, the possession was finally recognised in favor of the Scottish king. Queen Mary advanced James Hepburn, earl of Bothwell, to the dignity of duke of Orkney, which became extinct on his death, when king James VI. created a natural son of James V. earl of Orkney; which failing in his son, it returned to the crown. The title of earl was revived in the family of Hamilton in 1696, and in that family it remains.

The Orkney and Shetland isles compose one stewartry, and send one member to the imperial parliament. The Shetland freeholders, however, neglect their franchise, which is exercised solely by those of Orkney. The right of superiority to the Orkneys was dismembered from the crown by the union parliament, and granted, for a certain yearly consideration, to the earl of Morton, who was by queen Anne appointed hereditary steward and judiciary. Upon the abolition of hereditary jurisdictions the appointment of the steward became vested in the crown; but as the earl of Morton possessed the patronage of the stewartry, that nobleman long possessed the office of steward and sheriff. Sir Thomas Dundas, now created lord Dundas, acquired many years ago the superiority of the islands, from the earl of

Morton, by purchase, and still possesses it, with the right of patronage to all the parishes of the stewartry except two. Some of the islands contain ores of lead and iron, near Stromness and in Hoy. Limestone is common in them. They are divided into eighteen parochial districts.

ORLEANS, GENABUM, a large, handsome, and very ancient post town and city, the principal place of the department of the Loiret, France, having a royal court for that department, and those of the Loir-et-Cher, and the Indre-et-Loire; an inferior court of judicature; a chamber of commerce; an exchange; an academy; a society of sciences, Belles Lettres, and the arts; a royal college; and a free-school, for drawing and architecture. Its population is 43,000. It is situated in a fine fertile plain, on the right bank of the Loire, over which there is a magnificent bridge built of freestone. It is generally well built; the streets are wide, clean, and airy; its public squares are large, and its walks very pleasant. It is surrounded by numerous country houses, and extensive suburbs, which bespeak the opulence of a great city. Placed almost in the centre of France, at the branching out of the great roads that lead to every part of the kingdom, on the banks of a river which affords a facility for the conveyance of the productions and manufactures of all the departments, this place is the mart of a considerable quantity of merchandise, and the centre of a flourishing trade.

The origin of Orleans is to be traced to a very distant period. It is said to have been built on the ruins of the ancient Genabum, which was taken and burned by Cæsar; it was one of the principal cities of Gaul under the Roman power. In the year 450 it sustained a memorable siege by Attila, king of the Huns, and owed its safety to its general Actius, who obliged these barbarians to retire, and defeated them on the plains of Champagne. On the fall of the Roman empire it came into the possession of the Franks, and under the successor of Clovis was the capital of that kingdom. It was re-united to the crown in the reign of Hugh Capet. In 1428 the English laid siege to it, and were compelled to renounce their enterprise by the heroic valor of Joan of Arc and Dunois. Sixteen councils have been held here.

There are manufactures here of caps for the Levant, hats, woollen counterpanes, shot, files, rasps, curry-combs, candle-sticks, chemicals, paste, pipes, square tiles, earthen and brass pots, &c.; also cotton and woollen spinning factories, numerous and fine sugar-refining houses, vinegar breweries, wax bleaching-houses, dye-houses, brass-foundries, tan-yards, and manufactories of white and chamois leather. A considerable trade is carried on in wine, vinegar, brandy, flour, corn, sugar, saffron, timber, coals, grocery, drugs, and the above-mentioned articles. This is the native place of Amelot de la Houssaye, the celebrated commentator, and Pothier, a famous lawyer. Here are a public library, containing 23,000 volumes; the bridge over the Loire, commenced in 1751, and remarkable for its extent and its lightness, the middle arch being 100 feet broad; the monument erected to the memory of Joan of Arc, in the Place Mar-

troy; the cathedral, one of the finest in France, begun in the reign of Henry IV., and still unfinished: the entrance, surmounted by two round towers, is very beautiful. Orleans is eighty-four miles south-west of Melun; eighty-one N. N. W. of Bourges; forty-two north-east of Blois; eighty-seven north-east of Tours, and eighty-eight south of Paris; in W. long. from that capital 1° 26' N., lat. 47° 54'.

ORLEANS, New, city, port of entry, and capital of Louisiana, in a parish and on an island of the same name; 105 miles by the course of the river, above the bar at the mouth of the Mississippi, and about ninety in a direct line. It is distant from Washington about 1260 miles. Long. 90° 8' W., lat. 29° 57' N. Population of the city, in 1810, 17,242, of whom 5,961 were slaves, and of the parish 24,552. The population of the city in 1802 was estimated at 10,000 or 11,000; and in 1818 at 36,000. The city is on the left bank of the Mississippi, but so situated on a bend that it faces to the east. It is regularly laid out; the streets are generally forty feet wide, and intersect each other at right angles. On the streets near the river the houses are principally of brick, but in the back parts of the town they are mostly of wood. The buildings have no cellars, except the space between the ground and the lower floors, which are raised five or six feet from the earth. Most of the houses in the suburbs have beautiful gardens, ornamented with orange groves. The country here is lower than the surface of the river, which is confined within its channel by an artificial embankment, called the Levee, raised at great expense, and extending about 100 miles. It is directly in front of the town, and affords a very pleasant walk.

The city contains a court-house, a jail, a market-house, an arsenal, a governor's palace, a custom-house, a hospital, a French theatre, a catholic college, a female orphan asylum, a nunnery containing thirty or forty nuns, three insurance offices, four banks, one of which is a branch of the United States' bank, and three houses of public worship, one for Roman Catholics, one for Episcopalians, and one for Presbyterians. There also two chapels and a hall where public worship is celebrated. Most of the public buildings are large and handsome. The Catholic cathedral church is a large and elegant edifice. The Presbyterian church, just erected, is a spacious and handsome edifice of brick and stone.

The buildings of the city were formerly almost entirely of wood, but those recently erected are, for the most part, handsomely built of brick; and the place is of late, in various respects, very rapidly improving. The population is fast increasing by accessions from all the states in the union, and from almost every kingdom in Europe. The French language, fifteen years ago, was here almost universal, but at present the English predominates. There are five newspapers published in the city, three of which are printed in English, the other two both in French and English.

New Orleans is very advantageously situated for trade, near the mouth of one of the noblest rivers in the world, whose numerous branches,

extending many hundred miles in different directions, waft to this port the products of various climates; and it is already become one of the greatest emporiums of commerce in America. The shipping belonging to this port, in 1816, amounted to 13,299 tons. The number of arrivals and clearances in a year, ending October 1st, 1815, was 623; 1816, 699; and 1817, 1,030. In the year ending October 1st, 1817, 1,500 flat-bottomed boats, and 500 barges, arrived at the city, from the upper country, bringing its productions. There are twenty steam boats now navigating the rivers Mississippi and Ohio; and several more are building.

Statement of the principal articles of domestic production which arrived at New Orleans in one year, ending October 1st, 1817:—

Table of productions, 1816-17.

| | | |
|--------------------|----------------|-----------|
| Apples | barrels | 5,000 |
| Bacon and hams | cwts. | 18,000 |
| Bagging for cotton | pieces | 2,500 |
| Bark: quercitron | hhds. | 800 |
| Beef | bbls. | 4,000 |
| Beer | do. | 300 |
| Butter | do. and kegs | 1,800 |
| Candles | boxes | 150 |
| Cider | bbls. | 500 |
| Cotton | bales | 65,000 |
| Cordage | coils | 4,300 |
| Corn | bushels | 140,000 |
| Cornmeal | bbls. | 4,000 |
| Flour | do. | 190,000 |
| Ginseng | do. | 1,200 |
| Hemp | tons | — |
| Do. yarns | reels | 200 |
| Hides | sides | 6,000 |
| Lard | bbls. and kegs | 4,000 |
| Lead | cwts. | 7,000 |
| Ditto shot | do. | 600 |
| Molasses | gallons | 1,000,000 |
| Sugar | hhds. | 20,000 |
| Taffia | gallons | 400,000 |
| Tallow | cwts. | 200 |
| Tar | bbls. | 8,000 |
| Tobacco | hhds. | 28,000 |
| Ditto carrots | carrots | 10,000 |
| Ditto manufactured | cwts. | 1,500 |
| Wax, bees' | do. | 300 |
| Wheat | bushels | 95,000 |
| Whiskey | gallons | 250,000 |

The total amount of exports from the port of New Orleans, from October 1st 1816, to October 1st 1817, 13,501,036 dollars 72 cents.

The British made an attack on New Orleans in December, 1814, but were repulsed by the Americans under general Jackson, with the loss of about 3000 men, killed, wounded, and prisoners. The American army lost only seven men killed and six wounded.

The island of New Orleans is formed by the river Mississippi on one side, and the lakes Pontchartrain and Maurepas, together with an outlet of the Mississippi, called the river Iberville, on the other. It is about 160 miles long, and from three to fifty broad. It produces sugar, lemons, oranges, and figs. Lake Pontchartrain communicates with the city by the Bayou

St. John, which is navigable for small vessels, which pass between New Orleans, Mobile, and Pensacola. Fort St. John is situated at its entrance into the lake, seven miles north of New Orleans. Fort St. Charles is situated north-east of the city.

ORLÉANS (Louis, duke of), son of Philip, the regent of France, was born at Versailles, August 4, 1703. He had for a tutor the abbé Mongault, who inspired him with an early taste for study; which was combined, however, in the first part of his life with much dissipation. He married in 1724 the princess of Baden, and, having the misfortune to lose her two years after, he fell into a profound melancholy, which at length induced him to preclude himself from the world. He had an apartment in the abbey of St. Genevieve in 1730, and resided there entirely from 1742 till his death, February 4, 1752. He wrote translations, paraphrases, and annotations on the Scriptures, and other theological works.

ORLÉANS (Louis Joseph Philip, duke of), the celebrated Egalité, was a grandson of the foregoing, and born at St. Cloud, April 13, 1747. He was first called the duke of Chartres, and in 1769 was married to the daughter of the duke of Penthièvre, the grand admiral of France. To this office the prince wished to have succeeded, but, not being able to do so, he went as a volunteer on board the squadron of d'Orvilliers, and was present at the engagement with the English off Ushant, where he is said to have behaved with extreme cowardice. On his return home, the post of colonel-general of the hussars was bestowed on him. Some time after he succeeded the count de Clermont as chief of the French freemasons. On the death of his father, 1787, he became possessed of the hereditary estates, and from that period adopted various methods to obtain popularity, and gradually drew around him the friends of the rising revolution. His behaviour towards the king at the royal session, November 19, 1787, occasioned his exile to Villiers Coteret. Before the convocation of the States-general, attempts were made to gain him over to the court, but, becoming a member of that body, he protested against all the decrees of the chamber of nobles, and at length joined the tiers état to form the National Assembly. He evidently at this period wished to reduce the king to a state of tutelage, and procure for himself the office of lieutenant-general of the kingdom. But he soon became the passive instrument of the Jacobins, and ultimately the victim of his own and their schemes. Chosen a member of the Convention in September, 1792, the commune of Paris authorised him to adopt for himself and his descendants the appellation of Egalité, and he abandoned the name and title of his family. He voted in the Convention for the death of the king, and on the 7th of April following he was himself arrested and committed to prison at Mar-seilles; but, being brought before the tribunal of the department, he was declared innocent of all charges of conspiracy against the government. The committee of public safety, however, forbade his liberation, and after six month's detention he was transferred to Paris. At his examination on a new trial, he defended himself with considerable

address, but was condemned to suffer by the guillotine, and executed November 6, 1793.

ORLÉANS (Charlotte Elizabeth, duchess of) the daughter of Charles Louis of Bavaria, was born in 1652, and became in 1671 the second wife of the brother of Louis XIV., by whom she was the mother of the celebrated regent duke of Orleans. Her person was plain, but her disposition was lively, and her talents and wit made an impression on the king. She died in 1722. Her letters addressed to duke Ulrich of Bavaria, and the princess of Wales, tend to elucidate the history of Louis XIV., and the regency of her son. They were published at Paris in 1788, and reprinted in 1807; the best edition is that of M. Schubart, Paris, 1823, 8vo.

ORLÉANS (Peter Joseph), a French Jesuit, born at Bourges in 1641. He taught the belles lettres for some time in his society, but afterwards devoted himself to history. He wrote a History of the Revolutions of Spain: a History of Two Conquering Tartars, Chunchi and Camhi; the Life of Father Coton; and a History of the Revolutions in England, under the Stuarts, from 1603 to 1690. He died in 1698.

ORLOFF (Gregory), a favorite of Catherine II. of Russia, first served in the artillery under the empress Elizabeth, and was aide-de-camp to general Schuvaloff, whose mistress preferring him to the general, the intrigue was discovered, and Orloff was dismissed from his post. Catherine, then grand duchess, saved him from being sent into Siberia. He and his brother Alexis, who is said to have strangled the emperor, had a principal share in the subsequent revolution. He was now made grand master of the artillery, and raised to the first offices in the state. He even aimed at sharing the throne; but the empress, it is said, would only submit to a private marriage, which he imprudently refused. His influence, in consequence, declined, and he was supplanted by a new favorite. He was then ordered to travel, gratified with magnificent presents, and received the title of prince of the German empire. After an absence of five months he returned, and resided several years at Petersburg, hoping to recover his former influence. Disappointed in this, he made a tour in Germany, Italy, and France. He retired to Petersburg in 1782, when he became deranged, and died at Moscow the following year. He had by the empress one son, named Bobrinski, educated under the direction of his mother, but he showed himself unworthy of her care.

ORLOP, *n. s.* Belg. *overloop*; Teut. *overloft*. The middle deck of a ship.

A small ship of the king's, called the *Pensie*, was assailed by the *Lyon*, a principal ship of Scotland; wherein the *Pensie* so applied her shot, that the *Lyon's overloop* was broken, her sails and tackling torn; and, lastly, she was boarded and taken.

Hayward.

ORME (Robert), a modern historical writer, was born in 1728, at Anjengo, in the East Indies, where his father was a physician. He was sent to be educated at Harrow, after which he obtained a civil appointment in India, and became a member of the council at Fort St. George; and commissary and accomptant-gene-

ral. In 1758 he returned to England and wrote *The History of the Military Transactions of the British Nation in Indostan*, 2 vols, 4to. Also a work entitled *Historical Fragments of the Mogul Empire of the Mahrattas, &c.*, in one volume, 8vo. He died at Ealing in 1801. After his death appeared a new edition of the last work, with additions, and his life.

ORMSKIRK, in Lancashire, is a handsome town, with a good inland trade, lying about forty miles south by west of Lancaster, twelve from Liverpool, and 219 N.N.W. from London. By the inland navigation it has communication with the Mersey and its extensive windings. There is a bituminous earth about this place, from which oil is extracted that preserves raw flesh, and serves the poor people instead of candles. The only remarkable monuments are those of the ancient family of the Stanleys. Near this town is Latham House, the mansion of the earl of Derby, to which belongs a large estate, and a fine park. It was gallantly defended in the civil wars by lady Charlotte, countess of Derby, who gloriously held it to the last extremity against the parliament's forces, till she was relieved by prince Rupert. It was, however, ruined in a second siege. The church is an ancient Gothic structure, having a square tower, and at a small distance, in the church-yard, a spire-steeple was built by two sisters of the name of Orme. Besides the church there are two chapels of ease, and other places of worship.

ORMUZ, an island in the Persian Gulf, on which was built a city, once the most splendid and celebrated in all Asia in consequence of its being then the emporium of the trade not only between India and Persia, but also between Europe and the former country, its commodities being carried up the Euphrates and across the Syrian desert. Ormuz, indeed, did not owe its greatness in any degree to natural advantages, it being a mere rock of salt, producing not a single article of provision, nor a drop of water; so that it became a difficult task to render it habitable. When the Portuguese fleets had found their way round the Cape into the Indian seas, their cupidity was soon excited by the riches of Ormuz. They made several abortive attempts to seize it; but in 1514 Albuquerque sailed thither with a force so overwhelming, that resistance was scarcely attempted. It continued thus one of the most important seats of Portuguese power, till Shah Abbas conceived the design of wresting it from their hands. His efforts, however, would probably have been fruitless, had he not engaged the aid of an English squadron, then cruising in the Indian seas, which combined with him and took possession of the island of Kishme, on which Ormuz mainly depended for supplies. They then landed and obliged the Portuguese to evacuate the town, and retire into the castle, which was at last reduced by famine. The Persian monarch soon after ordered the inhabitants to evacuate the place, leaving only a Persian garrison. About the end of the last century, Ormuz was taken possession of by the Imam of Maskat; but, as a city and mart, it had no longer any existence, containing not more than twenty families. The

fort has now been put into a tolerable state of repair. The island, when viewed from the sea, resembles a mass of rocks and shells, thrown up by some violent convulsion of nature. The whole of the ancient city is one mass of ruins, the reservoirs for water being the only buildings that are at all in a perfect state. Long. 56° 40' E., lat. 27° 8' N.

ORNAMENT, *n. s.*

ORNAMENTAL, *adj.*

ORNAMENTALLY, *adv.*

ORNATE, *adj.*

ORNATENESS, *n. s.*

ORNATURE.

Fr. *ornement*; Ital. *Span. and Port. ornamento*; Lat. *ornamentum, ornatus*. Decoration; embellishment; adornment; dress; honorable attire or insignia: ornamental and ornamentally follow these senses: ornate is, decked; decorated; set off; fine: ornateness and ornature (rarely used), embellishment; finery.

So may the outward shows be least themselves;
The world is still deceived with ornament.

Shakespeare.

Ivorie, wrought in ornaments to decke the cheekes
of horse.

Chapman.

What thing of sea or land,

Female of sex it seems,

That so bedecked, ornate and gay,

Comes this way sailing? *Milton's Agonistes.*

Some think it most ornamental to wear their bracelets on their wrists, others about their ancles.

Brown.

The Tuscan chief to me has sent

Their crown, and every regal ornament.

Dryden.

If the kind be capable of more perfection, though rather in the ornamental parts of it than the essential, what rules of morality or respect have I broken, in naming the defects, that they may hereafter be amended?

Id.

The persons of different qualities, in both sexes, are indeed allowed their different ornaments; but these are by no means costly, being rather designed as marks of distinction than to make a figure.

Addison.

They are abused and injured, and betrayed from their only perfection, whenever they are taught that any thing is an ornament in them that is not an ornament in the wisest among mankind.

Low.

No circumstance of life can place a man so far below the notice of the world, but that his virtues or vices will render him, in some degree, an ornament or disgrace to his profession.

Rogers.

Even the Heathens have esteemed this variety not only ornamental to the earth, but a proof of the wisdom of the Creator.

Woodward.

Your ornaments hung all

On some patched doghole eked with ends of wall.

Pope.

If no advancement or knowledge can be had from universities, the time there spent is lost; every ornamental part of education is better taught elsewhere.

Swift on Religion.

A man whose great qualities want the ornament of exterior attractions is like a naked mountain with mines of gold, which will be frequented only till the treasure is exhausted.

Johnson.

ORNE, a river in France, which rises at Aunon, near Seez, in the department to which it gives its name, and passing by Argentau, Ecouches, Pont-d'Ouilly, Harcourt, and Caen, falls into the Manche, below Sallanelles, in the department of Calvados, after a course of ninety miles. It is navigable at high tides from Caen to its mouth, and conveys along its stream wines,

brandies, salt and salt fish, iron, wood soap, flax seed, building stones, plaster, &c. In its course it receives the waters of the Noiveau, the Aize, the Odon, and several other rivers, and at one spot forms a grand cascade falling between two rocks from a height of more than 100 feet.

ORNE, DEPARTMENT OF THE, in France, is formed of the Perche and the southern part of the ancient province of Normandy, and takes its name from the river Orne, which flows through it from the east to the north-west. The chief place of this prefecture is Alençon; it is divided into four arrondissements; Alençon, containing 72,115 inhabitants; Argentau, 113,218; Domfront, 117,266; and Mortagne, 120,285; being a total population of 422,884 souls, on an area of 2790 square miles, and yielding a territorial revenue of 22,096,000 francs. It is in the fourteenth military division, having a royal court at Caen and a bishopric at Seez, and containing thirty-five cantons and 627 communes, consisting of four electoral arrondissements, which send seven members to the chamber of deputies. This department is bounded on the north by that of Calvados, on the north-east by that of the Eure, on the east by the Eure-et-Loir; on the south by those of the Sarthe and the Mayenne, and on the west by that of the Channel.

The surface of the country is intersected through its whole length by a chain of lofty hills, partly covered with woods; some parts consist of uncultivated lands, and some of fertile plains producing all sorts of grain, and valleys abounding in pasturage, for the feed of great numbers of cattle and horses, which are held in high estimation for cavalry. This district is generally fertile in corn, hemp, flax, and great quantities of apples for cider. The quality of the soil and the variations of the climate are unfavorable to the cultivation of the vine. It is mostly cultivated with horses, and produces more than a sufficient supply for its inhabitants; consisting of 58,960 hectares of forest (oak, beech, and birch), besides arable land, which produces on an average twenty-nine francs twenty-two centimes per hectare. Besides the articles already mentioned there is abundance of small game, such as hares, red and gray partridges, &c., good fresh-water fish, sheep, pigs, poultry, geese, and bees. There are mines of iron, black lead, and manganese, and quarries of marble, granite, and freestone, and great quantities of turf. There are hot-baths at Bagnoles, and a mineral spring at Herse; also a royal stud at Pin, which is one of the finest in Europe, and races at Alençon, for twenty-one departments.

The manufactures consist of pointlace at Alençon, iron wire, pins, sewing and knitting-needles, ironmongery, oil of vitriol, thread, tapes, laces, linen cloths for the colonies, cotton, canvas, dimities, &c. There are also woollen and cotton spinning factories, twelve blast furnaces, thirty-six wire-forges, glass-houses, delf-potteries, paper-mills, bleaching grounds, tan-yards, and curriers' shops. A considerable trade is carried on in grain, trefoil-seed, timber of different kinds, cattle, pigs, poultry, goose feathers, &c. The chief rivers that water this department are the Orne, the Sarthe, the Eure, the Mayenne, the Noireau, the Iton, the Huisnes, the Egrenne, the Varennes, the Don, the Dive and the Rille. It is crossed by the great roads of Caen, Laval, Mans, and Chartres.

ORNICUS LAPIS, a name given by some authors to the sapphire of the ancients, which is a peculiar species of our lapis lazuli, in which the gold-colored matter is not disposed in veins, but in separate spots of the form of a star. It was first called oriniscus and orinus, by corruption from aurinus, golden; and thence came at length the word ornicus.

ORNITHÆ, a name given by the ancients to certain winds, which usually blew in the spring, at the time when the birds of passage came over to them. Pliny says that these winds blew from the west, and that by some the Etesian winds were called by this name. Others suppose that they blew from the north or north-west.

ORNITHOGALUM, star of Bethlehem; a genus of the monogynia order, and hexandria class of plants; natural order tenth, coronariæ: cor. hexapetalous, erect, persisting, and patent above the middle; the filaments alterdilated at the base. There are forty-three species, herbaceous perennials, rising from six inches to three feet high, having stalks terminated with long spikes of hexapetalous, star-shaped, white, and yellow flowers. Some of these are very hardy, and will prosper in any situation, but

O. Capense, a native of the Cape of Good Hope, requires the assistance of artificial warmth to preserve it in this country. They are all easily propagated by off-sets from the roots. The bulbous roots of all the species are nutritious and wholesome.

ORNIS/CIPIST, n. s. } Gr. ορνις, a bird, ORNITHOL'OGY. { and ορνιθολογια. One who prognosticates by the flight of birds: ornithology is the science which treats of their distinctions and peculiarities. See below.

ORNITHOLOGY.

ORNITHOLOGY is a branch of zoology, or the science which treats of birds, describes their form, external and internal, and teaches their economy and their uses.

A bird is an animal covered with feathers, furnished with a bill, having two wings, and only two legs, with the faculty, except in a very few instances, of removing itself from place to place through the air.

SECT. I.—EXTERNAL PARTS OF BIRDS.

A bird may be divided into the head, the body, and the limbs.

I. HEAD.

1. *Bill* (rostrum) is a hard horny substance, consisting of an upper and under part, extending from the head, and answering to the mandibles in quadrupeds. Its edges generally plain

and sharp, like the edge of a knife, cultrated, as are the bills of crows; but sometimes serrated, as in the toucan; or jagged, as in the gannet and some herons; or pectinated, as in the duck; or denticulated, as in the mergansers; but always destitute of real teeth imbedded in sockets. The base in falcons is covered with a naked skin or cere (cera); in some birds with a carnosous appendage, as the turkey; or a callous, as the curassow. In birds of prey, the bill is hooked at the end, and fit for tearing; in crows, straight and strong for picking; in water-fowls, either long and pointed for striking, or slender and blunt for searching in the mire, or flat and broad for gobbling. Its other uses are for building nests; feeding the young; climbing, as in parrots; or, lastly, as an instrument of defence or offence.

2. *Nostrils* (nares), the nice instruments of discerning their food, are placed either in the middle of the upper mandible, or near the base, or at the base, as in parrots; or behind the base, as in toucans and hornbills: but some birds, as the gannet, are destitute of nostrils. The nostrils are generally naked; but sometimes covered with bristles reflected over them, as in crows, or hid in the feathers, as in parrots, &c.

The fore part of the head is called the front (capistrum); the summit (vertex), or the crown; the hind part, with the next joint of the neck (nucha), the nape; the space between the bill and the eyes, which in herons, grebes, &c., is naked (lora) the straps; the space beneath the eyes (genae) the cheeks.

3. *Orbits* (orbitæ), the eye-lids; in some birds naked, in others covered with short soft feathers. Birds have no eye-brows; but the grouse kind have in lieu a scarlet naked skin above, which are called supercilia; the same word is also applied to any line of a different color that passes from the bill over the eyes.

4. *Ears*. Birds are destitute of auricles or external ears, having an orifice for admission of sound; open in all but owls, whose ears are furnished with valves.

5. The *chin*, the space between the parts of the lower mandible and the neck, is generally covered with feathers; but, in the cock and some others, has carnosous appendages called wattles (palearia); in others is naked, and furnished with a pouch, capable of great dilatation (sacculus), as in the pelican and corvorants.

6. *Neck* (collum), the part that connects the head to the body, is longer in birds than in any other animals; and longer in such as have long legs than in those that have short, either for gathering up their meat from the ground, or striking their prey in the water; except in web-footed fowls, which are, by reversing their bodies, destined to search for food at the bottom of waters, as swans, and the like. Birds, especially those that have a long neck, have the power of retracting, bending, or stretching it out, in order to change their centre of gravity from their legs to their wings.

II. BODY.

1. Consists of the *back* (dorsum), which is flat, straight, and inclines; terminated by the

2. *Rump* (uropygium), furnished with two

glands, secreting a fattish liquor from an orifice each has, which the birds express with their bills, to oil or anoint the discomposed parts of their feathers. These glands are particularly large in most web-footed water-fowls; but in the grebes, which want tails, they are smaller.

3. *Breast* (pectus) is ridged and very muscular, defended by a forked bone (clavicula), the merry-thought. The short winged birds, such as grouse, &c., have their breasts most fleshy or muscular; as they require greater powers in flying than the long-winged birds, such as gulls and herons, which are specifically lighter, and have greater extent of sail.

4. *Belly* (abdomen) is covered with a strong skin, and contains the entrails.

5. The *Vent*, or vent-feathers (crissum), which lies between the thighs and the tail. The anus lies hid in those feathers.

III. LIMBS.

1. *Wings* (alæ), adapted for flight in all birds except the dodo, ostriches, cassowary, great auk, and the penguins, whose wings are too short for the use of flying; but in the dodo and ostrich, when extended, serve to accelerate their motion in running; and in the penguins perform the office of fins in swimming or diving. The wings have near their end an appendage, covered with four or five feathers, called the bastard wing (ala notha), and alula spuria.

The lesser coverts (tectrices) are the feathers which lie on the bones of the wings. The greater coverts are those which lie beneath the former, and cover the quill-feathers and the secondaries.

The quill-feathers (primores) spring from the first bones (digiti and metacarpi), of the wings, and are ten in number. Quill feathers are broader on their inner than their exterior sides. The secondaries (secondariæ), are those that rise from the second part (cubitus), and are about eighteen in number, and equally broad on both sides. The primary and secondary wing-feathers are called remiges. A tuft of feathers placed beyond the secondaries near the junction of the wings with the body. This in water-fowls is generally longer than the secondaries, cuneiform, and may not unaptly be called the tertials.

The scapulars are a tuft of long feathers arising near the junction of the wings (brachia) with the body, and lie along the sides of the back, but may be easily distinguished, and raised with one's finger. The inner coverts are those that clothe the under side of the wing. The subaxillary are peculiar to the greater Paradise. The wings of some birds are instruments of offence. The anhima of Marcgrave has two strong spines in the front of each wing. One, species of plover has a single one in each; the whole tribe of jacana, and the gambo, or spur-winged goose of Willoughby, the same.

2. The *tail* is the director, or rudder, of birds in their flight; they rise, sink, or turn by its means; for, when the head points one way, the tail inclines to the other side; it is, besides, an equilibrium or counterpoise to the other parts; the use is very evident in the kite and swallows. The tail consists of strong feathers (rectrices), ten

in number, as in the woodpeckers, &c.; twelve in the hawk tribe, and many others; in the gallinaceous, the mergansers, and the duck kind, of more. It is either even at the end, as in most birds; or forked, as in swallows; or cuneated, as in magpies, &c.; or rounded, as in the purple jackedaw of Catesby. The grebe is destitute of a tail, the rump being covered with down; and that of the cassowary with the feathers of the back. Immediately over the tail are certain feathers, that spring from the lower part of the back, and are called the coverts of the tail (uropygium).

3. *Thighs* (femora) are covered entirely with feathers in all land birds, except the bustards and the ostriches; the lower part of those of all waders, or cloven-footed water fowls, are naked; that of all webbed-footed fowls the same, but in a less degree: in rapacious birds, they are very muscular.

4. *Legs* (crura); those of rapacious fowls very strong, furnished with large tendons, and fitted for tearing and a firm gripe. The legs of some of this genus are covered with feathers down to the toes, such as the golden eagle: others to the very nails; but those of most other birds are covered with scales, or with a skin divided into segments, or continuous. In some of the pies, and in all the passerine tribe, the skin is thin and membranous; in those of web-footed water-fowls, strong. The legs of most birds are placed near the centre of gravity: in land birds, or in waders that want the back toe, exactly so; for they want that appendage to keep them erect. Auks, grebes, divers, and penguins, having their legs placed quite behind, are necessitated to sit erect: their pace is awkward and difficult, walking like men in fetters: hence Linné styles their feet pedes compedes. The legs of all cloven-footed water fowls are long, as they must wade in search of food: of the palmated, short, except those of the flamingo, the avoset, and the courier.

5. *Feet* (pedes), in all land birds that perch, have a large back toe; most of them have three toes forward, and one backward. Woodpeckers, parrots, and other birds that climb much, have two forward, two backward; but parrots have the power of bringing one of their hind toes forward while they are feeding themselves. Owls have also the power of turning one of their fore toes backward. All the toes of the swift turn forward, which is peculiar among land-birds; the tridactylous woodpecker is also anomalous, having only two toes forward, one backward; the ostrich is another, having but two toes.

6. *Toes* (digiti). The toes of all waders are divided; but between the exterior and middle toe is generally a small web, reaching as far as the first joint. The toes of birds that swim are either plain, as in the single instance of the common water-hen or gallinule; or pinnated, as in the coots and grebes; or entirely webbed or palmated, as in all other swimmers. All the plover tribe, or charadrii, want the back toe. In the swimmers the same want prevails among the albatrosses and auks. No water fowls perch, except certain herons, the corvorant, and the shag.

7. *Claws* (ungues). Rapacious birds have

very strong, hooked, and sharp claws, vultures excepted. Those of all land birds that roost on trees have also hooked claws, to enable them to perch in safety while asleep. The gallinaceous tribe have broad concave claws for scraping up the ground. Grebes have flat nails like the human.

Among water fowls, only the skua and the black-toed gull have strong hooked or aquiline claws. All land birds perch on trees, except the struthious and some of the gallinaceous tribes. Parrots climb; woodpeckers creep up the boughs and boughs of trees; swallows cling. All water fowls rest on the ground, except certain herons, and one species of ibis, the spoonbill, and one or two species of ducks and of corvorants.

IV.—THE FEATHERS.

Feathers are designed for two uses; as coverings from the inclemency of the weather, and instruments of motion through the air. They are placed in such a manner as to fall over one another (tegulatum), so as to permit the wet to run off, and to exclude the cold; and those on the body are placed in a quincuncial form; most apparent in the thick-skinned water fowls, particularly in the divers.

The parts of a feather are, the shaft; corneous, strong, light, rounded, and hollow at the lower part; at the upper, convex above, concave beneath, and chiefly composed of a pith.

On each side the shafts are the vanes, broad on one side and narrow on the other; each vane consists of a multitude of thin laminæ, stiff, and of the nature of a split quill. These laminæ are closely braced together by the elegant contrivance of a multitude of small bristles; those on one side hooked, the other straight, which lock into each other, and keep the vanes smooth, compact, and strong. The vanes near the bottom of the shafts are soft, unconnected, and downy.

Feathers are of three kinds:—such as compose instruments of flight; as the pen-feathers, or those which form the wings and tail, and have a large shaft; the vanes of the exterior side bending downward, of the interior upward, lying close on each other, so that when spread not a feather misses its impulse on the air.

The feathers that cover the body, which may be properly called the plumage, have little shaft and much vane; and never are exerted or relaxed, unless in anger, fright, or illness.

The down (plumæ), which is dispersed over the whole body amidst the plumage, is short, soft, unconnected, consists of lanuginous vanes, and is intended for excluding that air or water which may penetrate or escape through the former. This is particularly apparent in aquatic birds, and remarkably so in the anserine tribe. There are exceptions to the forms of feathers. The vanes of the subaxillary feathers of the Paradise are unconnected, and the laminæ distant, looking like herring-bone. Those of the tail of the ostrich, and head of a species of curasso, curled. Those of the cassowary consist of two shafts, arising from a common stem at the bottom; as do, at the approach of winter, those of the ptarmigans of arctic countries. The

feathers of the penguins, particularly those of the wings, consist chiefly of thin flat shafts, and more resemble scales than feathers; those of the tail like split whale-bone.

SECT. II.—OF THE FLIGHT OF BIRDS.

The flight of birds is various; for, had all the same, none could elude that of rapacious birds. Those which are much on wing, or flit from place to place, often owe their preservation to that cause; those in the water to diving.

Kites, and many of the falcon tribe, glide smoothly through the air, with scarcely any apparent motion of the wings. Most of the order of pies fly quick, with a frequent repetition of the motion of the wings. The bird of Paradise floats on the air. Wood-peckers fly awkwardly, and by jerks, and have a propensity to sink in their progress.

The gallinaceous tribe, in general, fly very strong and swiftly; but their course is seldom long, by reason of the weight of their bodies.

The columbine race is of singular swiftness; witness the flight of the carrier pigeon. The passerine fly with a quick repetition of strokes; their flight, except in migration, is seldom distant. Among them, the swallow tribe is remarkably agile, their evolutions sudden, and their continuance on wing long.

The struthious race cannot fly; but still, in running, their short wings are of use when erect, to collect the wind, and accelerate their motion.

Many of the greater cloven-footed water-fowls, or waders, have a slow and flagging flight; but most of the less fly swiftly, and most of them with extended legs, to compensate the shortness of their tails. Rails and gallinules fly with their legs hanging down. Coots and grebes with difficulty are forced from the water; but, when they rise, fly swiftly.

Grebes and also divers fly with their hind parts downwards, by reason of the forwardness of their wings. Web-footed fowls are various in their flight. Several have a sailing or flagging wing, such as gulls. Penguins, and a species of auk, are denied the power of flight. Wild geese, in their migrations, fly off in a regular figure, in order to cut the air with greater ease; for example, in long lines, in the figure of a Δ , which the ancients report that the cranes assumed in their annual migrations, till their order was broken by storms.

The flight of birds is much assisted by their being endowed with the peculiar faculty of enlarging their bulk at will; and from this circumstance the animal is enabled to buoy itself up the easier in the air, its specific gravity being lessened in proportion as the bulk is increased.

This arises from certain air-vessels communicating with the lungs, and dispersed over various parts of the body, whereby the bird, by filling or emptying these vessels, has the power of contracting or dilating itself according to the occasion it may have for the change. See ZOOLOGY.

SECT. III.—OF THE NUPTIALS, NIDIFICATION, AND EGGS OF BIRDS.

Most birds are monogamous, or pair; in spring fixing on a mate, and keeping constant

till the cares of incubation and educating the young brood is past. Birds that lose their mates early, associate with others; and birds that lose their first eggs will pair and lay again. The male as well as the female, of several, join alternately in the act of incubation, and always in that of nutrition; when the young are hatched, both are busied in looking out for and bringing food to the nestlings; and at that period the mates of the melodious tribes, who before were perched on some sprig, and by their warbling alleviated the care of the females confined to the nest, now join in the common duty.

Of the gallinaceous tribe, the greatest part are polygamous, at least in a tame state; the pheasants, many of the grouse, the partridges, and bustards are monogamous.

The males of polygamous birds neglect their young; and, in some cases, would destroy them if they met with them. The economy of the struthious order, in this respect, is obscure. It is probable that the birds which compose it are polygamous, like the common poultry, for they lay many eggs; the dodo, however, is said to lay but one.

All waders or cloven-footed fowls are monogamous; and all with pinnated feet are also monogamous, except the ruffs. The swimmers, or web-footed fowls, observe the same order.

The affection of birds to their young is very strong during the whole time of nutrition, or as long as they continue in a helpless state; but, as soon as the brood can fly and shift for itself, the parents neglect, and even drive it from their haunts; the affection ceasing with the necessity for it.

The nest of a bird is one of those daily wonders that, from its familiarity, is passed over without regard. Each bird, after nuptials, prepares a place suited to its species, for depositing its eggs and sheltering its little brood; different genera, and different species, set about the task in a manner suitable to their several natures; yet every individual of the same species collects the same kind of materials, puts them together in the same form, and chooses the same sort of situation for placing this temporary habitation. The young bird of the last year, which never saw the building of a nest, pursues the same plan in the structure of it, and selects the same materials, as its parents did before. Birds of the same species, of different and remote countries, do the same. The swallows of Britain, and of the remoter parts of Germany, observe the same order of architecture; and in many instances have been known to return to the same places in which they had reared their young the year before.

The nests of the larger rapacious birds are rude, made of sticks, and bents, but often lined with something soft; they generally build in high rocks, ruined towers, and in desolate places; enemies to the whole feathered creation, they seek solitude. A few build upon the ground. Shrikes, allied to the rapacious birds, build their nests in bushes, with moss, wool, &c. The order of pies is very irregular in the structure of their nests. Parrots, and in fact all birds with two toes forward and two backward,

lay their eggs in the hollows of trees. And most of this order creep along the bodies of trees, and lodge their eggs also within them. Crows build in trees: among them, the nest of the magpie, composed of rude materials, is made with much art, quite covered with thorns, and only a hole left for admittance.

The nests of the orioles are contrived with wonderful sagacity, and are hung at the end of some bough, or between the forks of extreme branches. In Europe only three birds have pensile nests; the common oriole, the parus pendulinus or hang-nest titmouse, and one more. But in the torrid zone, where the birds fear the search of the gliding serpent and inquisitive monkey, the instances are very frequent; a marvellous instinct implanted in them for the preservation of their young. See ORIOLES.

All of the gallinaceous and struthious orders lay their eggs on the ground. The ostrich is the only exception, among birds, of the want of natural affection; 'which leaveth her eggs in the earth, and warmeth them in the dust, and forgetteth that the foot may crush them, or the wild beast may break them.'

The columbine race make a most artless nest, a few sticks laid across may suffice. Most of the passerine order build their nests in shrubs or bushes, and some in holes of walls or banks. Several in the torrid zone are pensile from the boughs of high trees; that of the tailor bird is a wondrous instance. Some of this order, such as larks, and the goatsucker, on the ground. Some swallows make a curious plaster nest beneath the roofs of houses; and an Indian species, nests of a certain glutinous matter, which are collected as delicate ingredients for soups of Chinese epicures.

Most of the cloven-footed water fowls, or waders, lay upon the ground. Spoonbills and the common herons build in trees, and make large nests with sticks, &c. Storks build on churches, or the tops of houses. Coots make a great nest near the water side. Grebes, in the water, a floating nest, adhering generally to some neighbouring reeds.

Web-footed fowls breed on the ground, as the avosets, terns, some of the gulls, mergansers, and ducks; the last pull the down from their breasts to make a softer and warmer bed for their young. Auks and guillemots lay their eggs on the naked shelves of high rocks; penguins, in holes under ground: among the pelicans, that which gives name to the genus makes its nest in the desert, on the ground. Shags sometimes on trees; cormorants and gannets on high rocks, with sticks, dried algae, and other coarse materials.

Rapacious birds, in general, lay few eggs; eagles and the larger kinds fewer than the lesser. The eggs of falcons and owls are rounder than those of most other birds; they lay more than six.

The order of pies vary greatly in the number of their eggs. Parrots lay only two or three white eggs. Crows lay six eggs, greenish, mottled with dusky. Cuckoos, as far as we can learn, two. Woodpeckers, wryneck, and kingfisher, lay eggs of a clear white and semi-transparent color. The woodpeckers lay six, the others more.

The nuthatch lays often in the year, eight at a time, white, spotted with brown. The hoopoe lays but two cinereous eggs. The creeper lays a great number of eggs. The honeysucker, the least and most defenceless of birds, lays but two; but the extinction of the genus is prevented by a swiftness of flight that eludes every pursuit.

The gallinaceous order, the most useful of any to mankind, lay the most eggs, from eight to twenty. 'Benigna circa hoc natura, innocua, et esculenta animalia fecunda generavit,' is a fine observation of Pliny; with exception of the bustard, a bird that hangs between the gallinaceous and the waders, which lays only two. The columbine order lay but two white eggs; but the domestic kind, breeding almost every month, supports the remark of the Roman naturalist.

All of the passerine order lay from four to six eggs, except the titmouse and the wren, which lay fifteen or eighteen, and the goatsucker, which lays only two. The struthious order disagree much in the number of eggs; the ostrich laying many, as far as fifty, the dodo but one.

The cloven-footed water fowls, or waders, lay, in general, four eggs; the crane and the Norfolk plover seldom more than two. All of the snipe and plover genus are of a dirty white, or olive spotted with black, and scarcely to be distinguished in the holes they lay in. The land rails (an ambiguous species) lay from fifteen to twenty. Of birds with pinnated feet, the coot lays seven or eight eggs and sometimes more. Grebes from four to eight, and those white.

The web-footed, or swimmers, differ in the number of their eggs. Those which border on the order of waders lay few eggs; the avoset two; the flamingo three; the albatross, the auks, and guillemots, lay only one egg a piece: the eggs of the two last are of a size strangely large in proportion to the bulk of the birds. They are commonly of a pale green color, spotted and striped so variously, that not two are alike; which gives every individual the means of distinguishing its own on the naked rock where such multitudes assemble. Divers lay only two. Terns and gulls lay about three eggs, of a dirty olive, spotted with black. Ducks lay from eight to twenty eggs; the eggs of all the genus are of a pale green, or white, and unspotted. Penguins probably lay but one egg.

Of the pelican genus, the gannet lays but one egg; the shags or cormorants six or seven, all white; the last the most oblong of eggs.

A minute account of the eggs of birds might occupy a treatise of itself. This is only meant to show the great conformity in the shape and colors of congenerous birds; and that the same uniformity of color is in the eggs as in the plumage of the birds they belong to.

Zinanni published at Venice, in 1737, *A Treatise on Eggs*, illustrated with accurate figures of 106 eggs. Mr. Reyger of Dantzic published, in 1766, a posthumous work by Klein, with twenty-one plates, elegantly colored.

SECT IV.—OF SYSTEMS OF ORNITHOLOGY.

Of the many systems that have been offered to the public of late years, Pennant gives the preference to that composed by Ray, in 1667, and afterwards published in 1678; but observes, at

Pavo bicalcaratus.
The Iris Peacock.



Pavo cristatus.
The Peacock.



Tetrao umbellus.
Ruffed, or Ruff Necked Grouse.



Tetrao Alchata.
Pin Tailed Grouse.



Phasianus Gallus.
The Wild Cock & Hen.



Didas Ineptus.
Hooded Dodo.

Pavo bicalcaratus.
The Iris Peacock.



Pavo cristatus.
The Peacock.



Tetrao umbellus.
Ruffed or Ruff Necked Grouse.



Tetrao Alchata.
Pin Tailed Grouse.



Phasianus Gallus.
The Wild Cock & Hen.



Didus Ineplus.
Hooded Dodo.

Pavo bicalcaratus.
The Iris Peacock.



Pavo cristatus.
The Peacock.



Tetrao umbellus.
Ruffed or Ruff Necked Grouse.



Tetrao Alchata.
Pin Tailed Grouse.



Phasianus Gallus.
The Wild Cock & Hen.

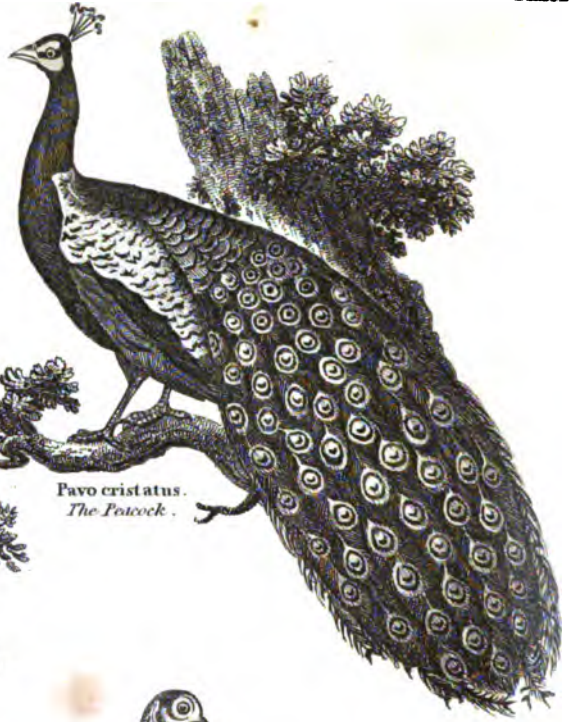


Didus Ineplus.
Hooded Dodo.

Pavo bicalcaratus.
The Iris Peacock.



Pavo cristatus.
The Peacock.



Tetrao umbellus.
Ruffed or Ruff Necked Grouse.



Tetrao Alchata.
Pin Tailed Grouse.



Phasianus Gallus.
The Wild Cock & Hen.



Didas Ineplus.
Hooded Dodo.



Ardea Egretta.
Great Egret.



Tantalus Melanopsis.
Black-faced Ibis.



Parra Sinensis.
China Jacana.



Tringa Lobata.
Grey Phalarope.

Psophia Crepitans.
Gold-breasted Trumpeter.

the same time, that it would be unfair to conceal the writer from whom our great countryman took the original hint of forming that system, which has proved the foundation of all that have been composed since that period.

Belon of Mans, a Frenchman, who first attempted to range birds according to their natures, published a work on ornithology in 1555. His arrangement of rapacious birds is as judicious as that of the latest writers. His second chapter treats of vultures, falcons, shrikes, and owls; in the two next he passes over to the web-footed water fowls, and to the cloven-footed; in the fifth he includes the gallinaceous and struthious, but mixes with them the plovers, buntings, and larks; in the sixth are the pies, pigeons, and thrushes; and the seventh takes in the rest of the passerine order.

Ray, and his illustrious pupil Francis Willoughby, assumed the same plan; but formed the great division of the terrestrial and aquatic birds; they made every species occupy their proper place, consulting at once exterior form and natural habit.

The subjoined scheme of arrangement, by Mr. Pennant, is introduced with the following observations:—‘Mr. Ray’s general plan is so judicious that to me it seems scarcely possible to make any change in it for the better; yet, notwithstanding he was in a manner the founder of systematic zoology, later discoveries have made a few improvements on his labors. My candid friend Linné did not take it amiss, that I, in part, neglected his example; for I permit the land fowl to follow one another, undivided by the water-fowl, the Grallæ, and anseres of his system; but, in my generical arrangement, I most punctually attend to the order he has given in his several divisions, except in those of his anseres and a few of his grallæ. For, after the manner of Mr. Brisson, I make a distinct order of water-fowl with pinnated feet, placing them between the waders or cloven-footed water fowl and the web-footed. The ostrich, and land birds with wings useless for flight, I place as a distinct order. The trumpeter (*psophia* Linnæi), and the bustards, I place at the end of the gallinaceous tribe; the last granivorous, swift runners, avoiders of wet places; and both have bills somewhat arched. It must be confessed that both have legs naked above the knees, and the last, like the waders, lay but few eggs. They seem ambiguous birds, that have affinity with each order; and it is hoped that each naturalist may be indulged the toleration of placing them as suits his own opinion.’

TABLE of Pennant’s Arrangement, with the corresponding Orders and Genera in the *Systema Naturæ* of Linné.

DIVISION I.—LAND BIRDS. DIVISION II.—WATER FOWL.

| | | | |
|-----------|---|---------------------|-----------------------|
| Divis. I. | { | Order I. Rapacious. | Accipitres Lin. |
| | | II. Pies. | Picæ. |
| | | III. Gallinaceous. | Gallinæ. |
| | | IV. Columbine. | Passeres. |
| | | V. Passerine. | Passeres. |
| | | VI. Struthious. | { Gallinæ. Grallæ. |

| | | | |
|------------|---|-------------------------------------|---------------------|
| Divis. II. | { | Order VII. Cloven-footed or waders. | Grallæ. |
| | | VIII. Pinnated feet. | Anseres. Grallæ. |
| | | IX. Web-footed. | Anseres. Grallæ. |

DIVISION I.

ORDER I.—RAPACIOUS.

| | |
|-------------|---------|
| 1. Vulture. | Vultur. |
| 2. Falcon. | Falco. |
| 3. Owl. | Strix. |

ORDER II.—PIES.

| | |
|---------------|-------------|
| 4. Shrike. | Lanius. |
| 5. Parrot. | Psittacus. |
| 6. Toucan. | Ramphastos. |
| 7. Motmot. | Ramphastos. |
| 8. Hornbill. | Buceros. |
| 9. Beefeater. | Buphaga. |
| 10. Ani. | Crotophaga. |

| | |
|------------------|------------|
| 11. Wattle. | Corvus. |
| 12. Crow. | Coracias. |
| 13. Roller. | Oriole. |
| 14. Oriole. | Gracula. |
| 15. Grackle. | Paradisæa. |
| 16. Paradise. | Trogon. |
| 17. Curucui. | Bucco. |
| 18. Barbet. | Cuculus. |
| 19. Cuckoo. | Junx. |
| 20. Wryneck. | Picus. |
| 21. Woodpecker. | Alcedo. |
| 22. Jacamar. | Alcedo. |
| 23. Kingfisher. | Sitta. |
| 24. Nuthatch. | Todus. |
| 25. Tody. | Merops. |
| 26. Bee-eater. | Upupa. |
| 27. Hoopoe. | Certhia. |
| 28. Creeper. | Trochilus. |
| 29. Honeysucker. | |

ORDER III.—GALLINACEOUS.

| | |
|----------------|------------|
| 30. Cock. | Phasianus. |
| 31. Turkey. | Meleagris. |
| 32. Pintado. | Numida. |
| 33. Curasso. | Crax. |
| 34. Peacock. | Pavo. |
| 35. Pheasant. | Phasianus. |
| 36. Grouse. | Tetrao. |
| 37. Partridge. | Tetrao. |
| 38. Trumpeter. | Psophia. |
| 39. Bustard. | Otis. |

ORDER IV.—COLUMBINE.

| | |
|-------------|----------|
| 40. Pigeon. | Columba. |
|-------------|----------|

ORDER V.—PASSERINE.

| | |
|-----------------|------------|
| 41. Stare. | Sturnus. |
| 42. Thrush. | Turdus. |
| 43. Chatterer. | Ampelis. |
| 44. Coly. | Loxia. |
| 45. Grosbeak. | Loxia. |
| 46. Bunting. | Emberiza. |
| 47. Tanager. | Tanagra. |
| 48. Finch. | Fringilla. |
| 49. Flycatcher. | Muscicapa. |
| 50. Lark. | Alauda. |
| 51. Wagtail. | Motacilla. |
| 52. Warbler. | Motacilla. |

| | |
|-----------------|--------------|
| 53. Manakin. | Pipra. |
| 54. Titmouse. | Parus. |
| 55. Swallow. | Hirundo. |
| 56. Goatsucker. | Caprimulgus. |

ORDER VI.—STRUTHIOUS.

| | |
|--------------|-----------|
| 57. Dodo. | Didus. |
| 58. Ostrich. | Struthio. |

DIVISION II.

ORDER VII.—CLOVEN-FOOTED, OR WADERS.

| | |
|--------------------|-----------------------|
| 59. Spoonbill. | Platalea. |
| 60. Screamer. | Palamedea. |
| 61. Jabiru. | Mycteria. |
| 62. Boatbill. | Cancroma. |
| 63. Heron. | Ardea. |
| 64. Umbre. | Scopus. <i>Briss.</i> |
| 65. Ibis. | Tantalus. |
| 66. Curlew. | Scolopax. |
| 67. Snipe. | Scolopax. |
| 68. Sandpiper. | Tringa. |
| 69. Plover. | Charadrius. |
| 70. Oystercatcher. | Hæmatopus. |
| 71. Jacana. | Parra. |
| 72. Pratincole. | Hirundo. |
| 73. Rail. | Rallus. |
| 74. Sheathbill. | |
| 75. Gallinule. | Fulica. |

ORDER VIII.—PINNATED FEET.

| | |
|----------------|-----------|
| 76. Phalarope. | Tringa. |
| 77. Coot. | Fulica. |
| 78. Grebe. | Colymbus. |

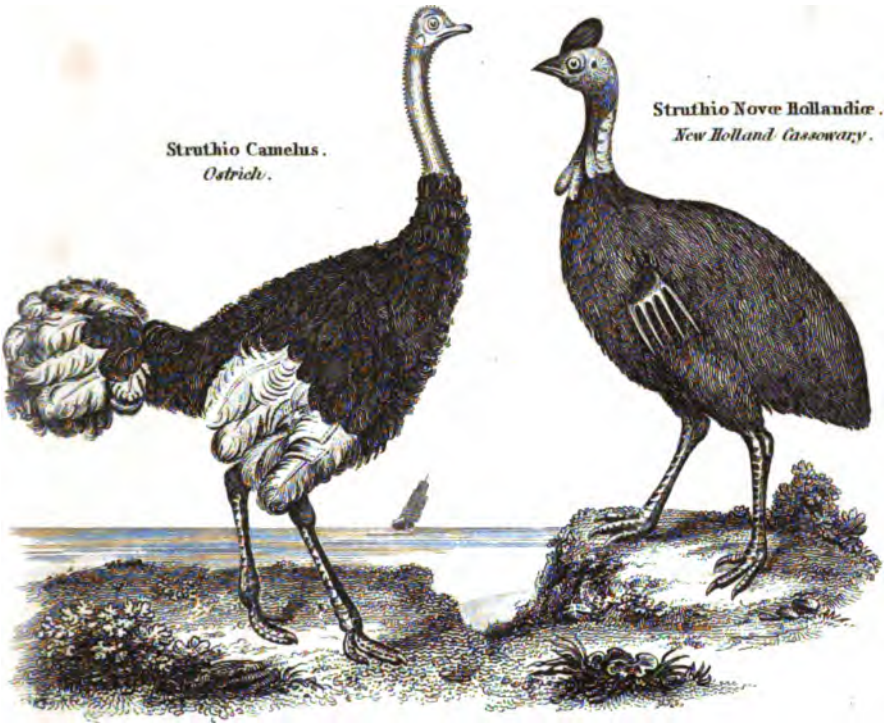
ORDER IX.—WEB-FOOTED.

| | |
|----------------|----------------------|
| 79. Avosetta. | Recurvirostra. |
| 80. Courier. | Curra. <i>Briss.</i> |
| 81. Flamman. | Phœnicopterus. |
| 82. Albatross. | Diomedea. |
| 83. Auk. | Alca. |
| 84. Guillemot. | Colymbus. |
| 85. Diver. | Colymbus. |
| 86. Skimmer. | Rhyncops. |
| 87. Tern. | Sterna. |
| 88. Gull. | Larus. |
| 89. Petrel. | Procellaria. |
| 90. Merganser. | Mergus. |
| 91. Duck. | Anas. |
| 92. Penguin. | { Diomedea. |
| | { Phaeton. |
| 93. Pelican. | Pelicanus. |
| 94. Tropic. | Phaeton. |
| 95. Darter. | Plotus. |

TABLE OF THE ORDERS AND GENERA IN THE INDEX ORNITHOLOGICUS, AND GENERAL SYNOPSIS OF BIRDS, PUBLISHED BY LATHAM.

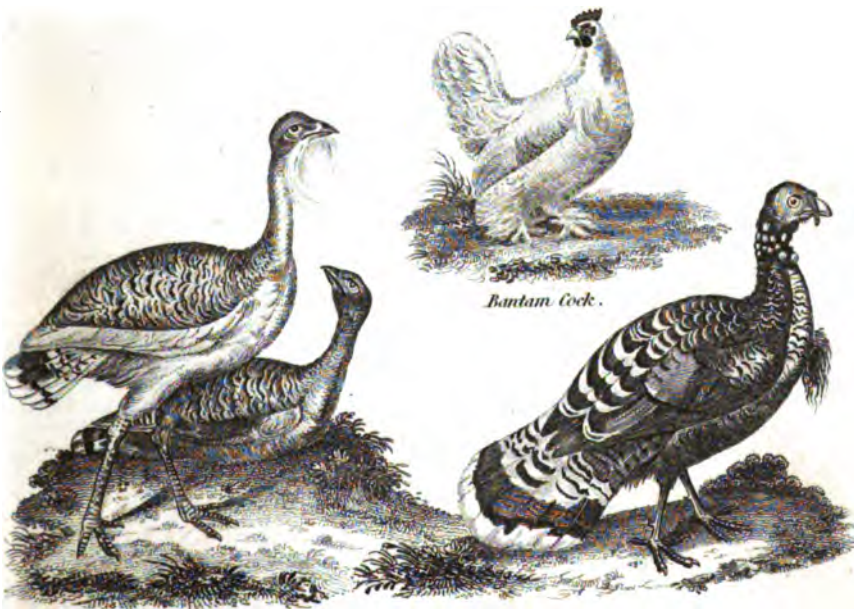
| <i>Ind. Orn.</i> | <i>Syn. of birds.</i> |
|---------------------|-----------------------|
| AVIUM ORDINES. | ORDERS OF BIRDS. |
| Div. I. | Div. I. |
| I. Accipitrea. | Rapacious. |
| II. Picæ. | Pies. |
| III. Passera. | Passerine. |
| IV. Columbæ. | Columbine. |
| V. Gallinæ. | Gallinaceous. |
| VI. Struthiones. | Struthious. |
| Div. II. | Div. II. |
| VII. Grallæ. | Waders. |
| VIII. Pinnatipedes. | Pinnated feet. |
| IX. Palmipedes. | Wed-footed. |

| <i>Ind. Orn.</i> | <i>Syn. of birds.</i> |
|---------------------|-----------------------|
| AVIUM GENEBA. | GENERA OF BIRDS. |
| Div. I. | Div. I. |
| AVES TERRESTRES. | LAND BIRDS. |
| ORDO I.—ACCIPITRES. | ORDER I.—RAPACIOUS. |
| 1. Vultur. | Vulture. |
| 2. Falco. | Falcon. |
| 3. Strix. | Owl. |
| ORDER II.—PICÆ. | ORDER II.—PIES. |
| 4. Lanius. | Shrike. |
| 5. Psittacus. | Parrot. |
| 6. Ramphastos. | Toucan. |
| 7. Momotus. | Motmot. |
| 8. Scythrops. | |
| 9. Buceros. | Hornbill. |
| 10. Buphaga. | Beefeater. |
| 11. Crotophaga. | Ani. |
| 12. Callæas. | Wattle-bird. |
| 13. Corvus. | Crow. |
| 14. Coracias. | Roller. |
| 15. Oriolus. | Oriole. |
| 16. Gracula. | Grackle. |
| 17. Paradiseæa. | Paradise-bird. |
| 18. Trogon. | Curucui. |
| 19. Bucco. | Barbet. |
| 20. Cuculus. | Cuckoo. |
| 21. Yurx. | Wryneck. |
| 22. Picus. | Woodpecker. |
| 23. Galbula. | Jacamar. |
| 24. Alcedo. | Kingsfisher. |
| 25. Sitta. | Nuthatch. |
| 26. Todus. | Tody. |
| 27. Merops. | Bee-eater. |
| 28. Upupa. | Hoopoe. |
| 29. Certhia. | Creeper. |
| 30. Trochilus. | Humming-bird. |
| ORDO III.—PASSERES. | ORD. III.—PASSERINE |
| 31. Sturnus. | Starling. |
| 32. Turdus. | Thrush. |
| 33. Ampelis. | Chatterer. |
| 34. Colius. | Coly. |
| 35. Loxia. | Grosbeak. |
| 36. Emberiza. | Bunting. |
| 37. Tanagra. | Tanager. |
| 38. Fringilla. | Finch. |
| 39. Phytotoma. | |
| 40. Muscicapa. | Fly-catcher. |
| 41. Alauda. | Lark. |
| 42. Motacilla. | Wagtail. |
| 43. Sylvia. | Warbler. |
| 44. Pipra. | Manakin. |
| 45. Parus. | Titmouse. |
| 46. Hirundo. | Swallow. |
| 47. Caprimulgus. | Goatsucker. |
| ORDO IV. | ORDER IV. |
| COLUMBÆ. | COLUMBINE. |
| 48. Columba. | Pigeon. |
| ORDO V. | ORDER V. |
| GALLINÆ. | GALLINACEOUS |
| 49. Pavo. | Peacock. |
| 50. Meleagris. | Turkey. |
| 51. Penelope. | |
| 52. Numida. | Pintado. |
| 53. Crax. | Curasso. |
| 54. Phasianus. | Pheasant. |
| 55. Tinamus. | Tinamon. |
| 56. Tetrao. | Grouse. |



Struthio Camelus.
Ostrich.

Struthio Novæ Hollandiæ.
New Holland Cassowary.



Bantam Cock.

Tarda Otis.
Great Bustard.

Meleagris Gallinæ.
American Wild Turkey.

| <i>Ind. Orn.</i> | <i>Syn. of birds.</i> |
|-------------------------|---------------------------|
| 57. Perdix. | Partridge. |
| 58. Psophia. | Trumpeter. |
| 59. Otis. | Bustard. |
| ORDO VI. | ORDER VI. |
| STRUTHIONES | STRUTHIOUS. |
| 60. Didus. | Dodo. |
| 61. Struthio. | African ostrich. |
| 62. Casuarius. | Cassowary. |
| 63. Rhea. | American ostrich |
| Div. II. | Div. II. |
| AVES AQUATICÆ. | WATER BIRDS. |
| ORDO VII.—GALLÆ. | ORDER VII.—WADERS. |
| 64. Platalea. | Spoonbill. |
| 65. Palamedea. | Screamer. |
| 66. Mycteria. | Jabiru. |
| 67. Cancroma | Boatbill. |
| 68. Scapus. | Umbre. |
| 69. Ardea. | Heron. |
| 70. Tantalus. | Ibis. |
| 71. Numenius. | Curlew. |
| 72. Scolopax. | Snipe. |
| 73. Tringa. | Sandpiper. |
| 74. Charadrius | Plover |
| 75. Cursorius. | |
| 76. Hematopus. | Oyster-catcher. |
| 77. Glareola. | Pratincole. |
| 78. Rallus. | Rail. |
| 79. Parra. | Jucana. |

| <i>Ind. Orn.</i> | <i>Syn. of birds.</i> |
|-------------------------|----------------------------|
| 80. Gallinula. | Gallinule. |
| 81. Vaginalis. | Sheath-bill. |
| ORDO VIII. | ORDER VIII. |
| PINNATIPEDES. | With PINNATED FEET. |
| 82. Phalaropus. | Phalarope. |
| 83. Fulica. | Coot. |
| 84. Podiceps. | Grebe. |
| ORDO IX. | ORDER IX. |
| PALMIPEDES. | WEB-FOOTED. |
| * Pedibus longioribus. | * With long legs. |
| 85. Recurvirostra. | Avoset. |
| 86. Corriira. | Courier. |
| 87. Phœnicopterius. | Flamingo. |
| †† Pedibus brevioribus. | †† With short legs. |
| 88. Diomedea. | Albatross. |
| 89. Aica. | Auk. |
| 90. Uria. | Guillemot. |
| 91. Colymbus. | Diver. |
| 92. Rhynchops. | Skimmer. |
| 93. Sterna. | Tern. |
| 94. Larus. | Gull. |
| 95. Procellaria. | Petrel. |
| 96. Mergus. | Merganser. |
| 97. Anas. | Duck. |
| 98. Aptenodytes. | Penguin. |
| 99. Pelicanus. | Pelican. |
| 100. Phaeton. | Tropic-bird. |
| 101. Plotus. | Darter. |

ORNITHOPUS, in botany, bird's-foot, a genus of the decandria order, and diadelphia class of plants: natural order thirty-second, papilionaceæ. Legumen articulated, cylindrical, and bent in the form of a bow. Species five, of which one is common to our own pastures, and was formerly thought a specific for the stone.

ORNUS, a species of the fraxinus, or ash tree, which produces the manna. Its smaller leaves are sawed, with flowers having petals. To obtain the manna, those employed in July and August make an oblong incision, and take off from the bark of the tree about three inches in length, and two in breadth: they leave the wound open, and by degrees the manna runs out, is almost suddenly thickened to its proper consistence, and is found adhering to the bark. This is collected in baskets, and called manna grassa. When they want fine manna, they apply to the incision of the bark thin straw, or small bits of shrubs; so that the manna in coming out runs upon these bodies, and is collected in a sort of regular tubes, which give it the name of manna in cannoli.

OROBANCHE, in botany, broom rape, a genus of the angiospermia order, and didynamia class of plants: natural order fortieth, personate: CAL. bifid: COR. ringent: CAPS. unilocular, bivalved, and polyspermous: there is a glandule under the base of the germen. Species eighteen, five of which are common to the fields and woods of our own country; the rest are scattered over Europe, Asia, and America.

OROBIO (Balthasar), a celebrated Jew of Spain. He was so skilled in the scholastic philosophy of Spain, that he was made professor of metaphysics in the university of Salamanca.

Afterwards, however, applying himself to the study of physic, he practised that art at Seville with success, till, accused of Judaism, he was thrown into the inquisition, and suffered the most dreadful tortures. After three years confinement, during which he constantly denied that he was a Jew, and professed to be a true Christian, he was discharged; and, repairing to France, was made professor of physic at Thoulouse. At last, weary of dissembling, he repaired to Amsterdam, where he was circumcised, took the name of Isaac, and professed Judaism; still continuing, however, to practise physic, in which he was much esteemed. He distinguished himself in a controversy with Limborch, and by writing against Spinoza. Orobio died in 1687.

OROBUS, bitter vetch, a genus of the decandria order, and diadelphia class of plants: natural order thirty-second, papilionaceæ: style linear: CAL. obtuse at the base, with the upper segments deeper and shorter than the rest. There are nine species. All of them have fibrated roots, which are perennial, but are annual in stalk, rising early in spring, and decaying in autumn. They are very hardy plants, and prosper in any common soil of a garden. Most of these plants are very floriferous, and the flowers conspicuous and ornamental for adorning the flower compartments. The flowers are universally of the papilionaceous or butterfly kind, consisting each of four irregular petals, i. e. a standard, two wings, and a keel; and are all succeeded by long taper seed-pods, furnishing plenty of ripe seed in autumn; by which the plants may be propagated abundantly, as also by parting the roots.

O. tuberosus, wood pea, or peas heath. The

Highlanders have a great esteem for the tubercles of the roots of this species. They dry and chew them to give a better relish to their liquor; they also affirm that they are good against most disorders of the breast, and that by the use of them they are enabled to resist hunger and thirst for a long time. In Breadalbane and Ross-shire they sometimes bruise and steep them in water, and make an agreeable fermented liquor with them. They have a sweet taste, something like the roots of liquorice; when boiled, are nutritious and well flavored; and in times of scarcity they have served as a substitute for bread.

ORODES, a prince of Parthia, who murdered his brother Mithridates, and ascended his throne. He defeated Crassus, the Roman triumvir, and poured melted gold down the throat of his fallen enemy, to reproach him for his avarice and ambition. He joined the party of Cassius and Brutus at Philippi. It is said that, when Orodes became old and infirm, his thirty children applied to him, and disputed in his presence their right to the succession. Phraates, the eldest of them, obtained the crown from his father; and, to hasten him out of the world, he attempted to poison him. The poison had no effect; and Phraates, still determined on his father's death, strangled him with his own hands, about thirty-five years before the Christian era. Orodes had reigned about fifty years.

ORONTES, a famous river of Syria, about which Strabo and other ancient authors mention many fabulous stories of its disappearing and running under ground for several miles, &c. It rises in Cœlosyria, and after a rapid course falls into the Mediterranean below Antioch. It is now called Asi.

ORONTIUM, in botany, a genus of the monogynia order, and hexandria class of plants: natural order second, piperitæ. Spadix cylindrical, covered with florets: cor. hexapetalous and naked: the follicles monospermous. Style none.

OROPESA, a town of Peru, the capital of the province of Cochabamba, situated on one of the tributary streams of the Rio Grande. Its inhabitants, about 17,000, are chiefly employed in trading with the neighbouring provinces in fruits and grain. They include many rich and noble families. Eight miles north of Cochabamba, and eighty-nine N. N. W. of Chuquisaca. There are other settlements of this name in the neighbourhood.

OROSIUS (Paul), a Spanish historian and divine, and a disciple of St. Augustin; who sent him to Jerusalem to consult St. Jerome on the origin of the soul. He wrote a Universal History from the creation to his own time, entitled *Miseria Humana*, in which he displays more learning and diligence than chronological accuracy. The best edition is that of Havercanys, 4to. Lug. Bat. 1767. He wrote also a treatise on Free Will, and other pieces. He flourished about A. D. 416.

ORPHAN, *n. s. & adj.* } *Fr. orphanin; Gr. ὀρφανός.* A child bereft of parents; applied to a child who has lost either one parent or

both: orphanage and orphanism, mean the state of an orphan.

Poor orphan in the wide world scattered,
As budding branch rent from the native tree,
And thrown forth until it be withered:
Such is the state of man. *Spenser.*

Sad widows, by thee rifled, weep in vain,
And ruined orphans of thy rapen complain. *Sandys.*

This king, left orphan both of father and mother, found his estate, when he came to age, so disjointed, even in the noblest and strongest limbs of government, that the name of a king was grown odious. *Sidney.*

Who can be bound by any solemn vow
To leave the orphan of his patrimony,
To wring the widow from her 'customed right,
And have no other reason for his wrong,
But that he was bound by a solemn oath? *Shakespeare.*

The sea with spoils his angry bullets strow,
Widows and orphans making as they go. *Waller.*

Pity, with a parent's mind,
This helpless orphan whom thou leavest behind. *Dryden.*
Collections were made for the relief of the poor, whether widows or orphans. *Nelson.*

Coriolanus's father died when he was an infant. Alcibiades and Coriolanus would, with Demosthenes, make as noble a trio of orphans as all antiquity could furnish. *Bp. Watson.*

Rich, noble, but an orphan; left an only
Child to the care of guardians good and kind;
But still her aspect had an air so lonely. *Byron.*

First stern philanthropy; not she who dries
The orphan's tears and wipes the widow's eyes,
But French philanthropy, whose boundless mind
Glows with the general love of human kind. *Canning.*

ORPHEUS, a celebrated poet and musician of antiquity, who, according to Sir Isaac Newton, was the son of Cægrus, who received Thrace from Sesac when he conquered that country. With the kingdom, the latter gave Cægrus one of his singing women, for his wife, who brought him Orpheus. Hence his mother was fabled to be Calliope. On account of the great antiquity of Orpheus, numberless fables have been intermingled with his history, but there can be no doubt of his existence. To his father he was indebted for his first instruction in religion, and he afterwards became a disciple of the Idæi Dactyli in Crete. Thence he travelled into Egypt, and became a proficient in all kinds of literature. From the latter country he transplanted the whole fable of Osiris into Greece, adapting it to the family of Cadmus. The people held him in the highest veneration, supposing him to be possessed of the secrets of expiating crimes, curing diseases, and appeasing the gods. He promulgated an idea of hell, instituted the mysteries of Hecate among the Æginetes, and those of Ceres in Sparta. He is chiefly famed for his music, which is poetically represented to have had the effect of taming the most ferocious animals, and making the trees of the forest dance in concert to his lyre. Eurydice made a deep impression on the melodious musician, and their nuptials were celebrated. Their happiness, however, was but short: for Aristæus became enamoured of her; and as she

fled from her pursuer, a serpent bit her foot, and she died of the poisoned wound. Her loss was severely felt by Orpheus, and he resolved to recover her or perish in the attempt. With his lyre in his hand, he entered the infernal regions, and gained an easy admission to the palace of Pluto. Having charmed all hell with his strains, Pluto and Proserpine consented to restore Eurydice, provided he forbore looking behind him till he had come to the extreme borders of hell. The conditions were gladly accepted, and Orpheus was already in sight of the upper regions of the air, when he forgot his promise, and, turning back to look at his wife, lost her for ever. The only comfort he could find was to soothe his grief by the sound of his musical instrument in grottoes or on mountains. He totally separated himself from the society of mankind; and the Thracian women, whom he had offended by his coldness to their amorous passion, attacked him while they celebrated the orgies of Bacchus; and, after they had torn his body to pieces, they threw his head into the Hebrus, which still articulated Eurydice! Eurydice! as it was carried down the stream into the Ægean Sea. Others say, that as he attempted to conjure his wife from the dead, which they understand by the story of his going down to hell, he thought he saw her; and when afterwards, on looking back, he missed her, he died of grief. Pausanias speaks of a temple in Thesprotia, where Orpheus went to call up the ghost of Eurydice. Some say that he was killed by a thunder-bolt. He was buried at Pieria, in Macedonia, according to Apollodorus. The inhabitants of Dion boasted that his tomb was in their city, and the people of Mount Libethrus in Thrace claimed the same honor; and reported that the nightingales, which built their nests near his tomb, sang with greater melody than all other birds. Orpheus, after death, received divine honors; the muses gave an honorable burial to his remains, and his lyre became one of the constellations. Tzetzes explains the fable of his drawing his wife Eurydice from hell, by his great skill in medicine, with which he prolonged her life, and thus snatched her from the grave. With respect to the writings of Orpheus, he is mentioned by Pindar as author of the Argonautics, and Herodotus speaks of his Orphics. His hymns, says Pausanias, were very short, and but few in number. Those poems that bear his name, many of which are known to be the work of others, were published at Nuremberg in 1702, and reprinted at Leipsic, in 1764, under the title of *OPHIOE ADIANTA*.

ORPHEUS, in ichthyology, the name of a fish caught in the Archipelago. It is of a broad and flat figure, and of a fine purple color; its eyes are large and prominent; and its teeth serrated; it has only one fin on the back, and the anterior rays of that are prickly, the others soft to the touch; its anus is small, and is said to have no passage for the semen. This was the fish called orpheus by the ancients, but the modern Greek call another fish by that name. It is a species of the sparus, of a flat figure, but very thick, has

a small mouth, and is covered with small but very rough scales, which adhere very firmly to the flesh; the tail is not forked; it has fleshy lips, and very small teeth; its back and sides are black; its belly white; it has a large black spot at the root of the tail; its head is reddish, and its fins are very elegantly diversified with various colors: it has only one back fin, and that has the anterior ray prickly, the hinder ones not at all so. It grows sometimes to twenty pounds weight, and is much esteemed among the modern Greeks.

ORPIMENT, *n. s.* Fr. *orpiment*; Lat. *auripigmentum*. A gold-colored fossil, defined in the extracts.

For the golden color, it may be made by some small mixture of *orpiment*, such as they use to brass in the yellow alchemy; it will easily recover that which the iron loseth.

Bacon.

True and genuine *orpiment* is a foliaceous fossil, of a fine and pure texture, remarkably heavy, and its colour is a bright and beautiful yellow, like that of gold. It is not hard, but very tough, easily bending without breaking. *Orpiment* has been supposed to contain gold, and is found in mines of gold, silver, and copper, and sometimes in the strata of marl.

Hill.

ORPIMENT, in natural history, a mineral composed of sulphur and arsenic, sometimes artificially produced, but found also native, and constituting one of the ores of arsenic. It is of two kinds, red and yellow, the former called realgar. It is commonly found in shapeless masses, very seldom crystallised; though baron Borne once found it in a polyhedral form on a blue clay in Hungary. The red orpiment is a very beautiful substance of a fine bright red, very glossy, and a little transparent, and is found in the Turkish dominions, in the islands of the Archipelago, and even in our own country, Dr. Hill having received some of it from Cornwall, under the name of red mundic. The yellow kind contains about one-tenth of its weight of sulphur. It is the common orpiment of the shops. Some think that the noxious qualities of the arsenic are so much counteracted by the sulphur with which this substance is mixed, that it may be swallowed with safety; but Macquer positively asserts the contrary, and cautions against its use, even though we be certain that the orpiment is native. There is, besides, a broad-flaked, gold-colored kind, well-known among the ancients, as is plain from the description of it left by Dioscorides, and still much esteemed by our painters. It is found in the islands of the Archipelago, in the mines of Gosselaer, in Saxony, in some parts of Turkey, and the East Indies, and in its utmost purity about Smyrna. It makes the finest of all yellows in painting. The small flaked, yellow kind, which is the common orpiment of the shops, is also a fine color, though greatly inferior to the former.

ORPINE, *n. s.* Fr. *orpin*. A plant. The sedum telephium of Linnæus.

Cool violets and *orpine* growing still,
Embathed balm and cheerful galingale.

Spenser.

ORPINE, in botany. See SEDUM.

ORRERY. The employment of planetary machines to illustrate and explain the motions of the heavenly bodies appears to have been coeval with the construction of clepsydræ and other horological automata, as nearly all the early water-clocks, of a complex character, represented the motions of the starry sphere, and in this respect the ancients were more successful than the mechanics of the present day. But the splendid graphic delineations furnished by the modern astronomer were wanting, and for these we are mainly indebted to the labors of Walker and Bartlet. The eidouranion is indeed a mimic representation of the vast system of which our earth forms so insignificant a part. It may, however, be advisable to commence our notice of this useful apparatus for popular instruction, by examining some of the best early planetary machines.

Ptolemy, who died about 140 years after the commencement of the Christian era, devised the circles and epicycles that distinguish his system, in order to account for the apparent irregularities of the planetary motions; and, though he probably could not construct a machine to represent these motions exactly, yet, in his *Almagest*, he described a sphere, furnished with the constellations, to which he could refer the apparent paths of the heavenly bodies, and by which he could explain his system.

From the time of Ptolemy to the sixteenth century, in which Copernicus revived the system of Philolaus, or, as is generally said, of Pythagoras, the machines which were constructed represented the Ptolemaic system, which, like the Egyptian, placed the earth in the centre, but supposed the moon and planets all separately revolving round it every day, whilst they slowly performed periodic cycles and epicycles, to account for the stationary and retrograde appearances, that could not otherwise be explained. The most ancient machine of which we have met with any account during this period is that of Chromatius, the governor of Rome, in the third century, which is mentioned in the first volume of Beckmann's *History of Inventions and Discoveries*. According to the accounts of St. Sebastian and Polycarp, this costly piece of mechanism consisted of a pavilion of glass, in the construction of which were consumed 200 lbs. weight of gold, as materials for the workmanship, and all the heavenly bodies were represented by mechanism, together with the phases of the moon; there also appears to have been an ecliptic circle divided into signs. But, whatever might be the particular construction of this machine, it was entirely destroyed, on account of some imaginary impiety attached to such a representation of the heavens.

The planetary clock invented by the celebrated mathematician Finee was begun in 1553, and made during the space of seven years by the best workmen that could be found. The interior shape of this machine is represented as a pentagonal column seventeen inches in diameter, and six feet high, surmounted by a brass celestial globe of seven inches diameter, which contains forty-eight constellations, and which revolves once in every twenty-four hours from east to

west. The interior part of this pillar contains upwards of 100 wheels to give the respective motions to the sun, moon, and planets, actuated by clock-work, and the whole kept in their respective motions by a weight suspended within the pillar, the fall of which is one foot per day, and the motions continue forty-eight hours and upwards. The movement of each planet consists of twelve, ten, or eight wheels, as the necessary accuracy requires, and they are all made of steel, and actuated by one common arbour. The description of this elaborate instrument is contained in a printed description preserved in the Royal Library, Paris, in which it is said that the increase and decrease of velocity is affected by the interior mechanism; and the motions of the heavenly bodies are represented, together with the eccentricities and motions of the apogees, nodes, and latitudes of each. The five plain sides of the pentagonal column have each a brass face of two feet in length, and ten inches in breadth, in each of which are two circles, the upper and the lower, except in that containing the places of the sun and moon, which has three circles; and hands or pointers are made to indicate the different motions on the respective dials or circles which are appropriated according to the subjoined arrangement, viz.

Face 1st. The motion of Saturn above, and of Jupiter below.

2nd. The motion of Mars above, and of Mercury below.

3rd. The motion of Venus above, and of the sun below.

4th. The motion of the moon above, and of the moon's nodes below.

5th. The hours above, and astrolabe below; and in the middle the conjunctions, opposition, eclipses, &c., of the sun and moon.

The wheel work and other mechanical parts of the instrument are not contained in Berthoud's extract, whence this detail is abridged; but the times of the various revolutions attributed to the movements, and also to the celestial bodies themselves, which are said to be represented to a minute in a revolution, are given in the subjoined table.

| Planets. | Whole periods. | Motion in twenty-four hours. |
|-------------|----------------|------------------------------|
| | d. h. m. s. | |
| Mercury . | 87 23 15 36 | 0 59 8 |
| Venus . . | 224 17 53 2 | 0 59 8 |
| Sun . . . | 365 5 48 15 | 0 59 8 |
| Mars . . . | 688 23 31 56 | 0 31 26 |
| Jupiter . . | 4332 14 49 31 | 0 4 59 |
| Saturn . . | 10759 4 58 25 | 0 2 1 |
| Moon . . . | 27 13 18 35 | 13 3 54 |
| Do. synodic | 29 12 44 3 | 13 8 35 |
| Do. nodes . | 19 years. | |

This machine does not exhibit to the eye the representatives of the planets in their orders and distances, but only indicates on their different faces the periods of their sidereal revolutions; the earth is considered by the inventor as the centre of the orbits of the Moon, Sun, Mars,

Jupiter, and Saturn, the three last of which are made to move in the Ptolemaic epicycles, but the sun is made the centre of the orbits of Mercury and Venus, according to the Egyptian system, which is the reason why the daily progress in the ecliptic is put down for these three alike. It is somewhat remarkable that this arrangement is not according to the Copernican system, though Copernicus had published his book called the *Revolutions of the Celestial Orbs*, which laid the foundation of his system, twelve years before; hence we must suppose, either that the book had not found its way from Prussia into France at that time, or else that the system at first met with opposition. Thus a union of the Ptolemaic with the old Egyptian system became the favorite of the astronomer before us, and three years afterwards he published a book in defence of this theory.

The next machine we meet with is the planetarium of P. Schirleus de Rheita described in the *Technica Curiosa* of Schott, and made about the year 1650. This machine is said to have represented all the true and mean motions of the planets, their stations, and direct and retrograde appearances, without epicycles or equations, and with very few wheels by the help of endless screws and pulleys. The movements were actuated by water, and on the exterior part of the instrument were three separate faces, or dials, described into a number of circles for the orbits of the planets and signs of the zodiac; the lowest face contained the circles of the Sun, Venus, and Mercury, which were denominated the inferior planets, and their respective hands or arms; the uppermost face had the circle of Saturn, Jupiter, and Mars, with their respective hands; and the face in the middle had twelve hours, and also a circle for the moon. The first wheel, which gave motion to all the rest, was carried round by a fall of water once in a minute, on the arbor of which was a single endless screw which drove a wheel of fifteen teeth round in as many minutes; on the arbor of this was another screw driving another wheel of twenty-four round in six hours; again, on the arbor of the wheel of twenty-four was another screw, making a wheel of twenty teeth revolve in five days: and, lastly, a screw on the arbor of the last mentioned wheel of twenty impelled a wheel of seventy-three once round in exactly 365 days, which represented the annual motion of the sun in his supposed orbit round the earth. The last screw also drove a wheel of forty-five teeth round in 255 days, which, by the help of two equal pulleys, carried Venus round the sun in this period; and in like manner, it is said, motions were produced in the rest of the planets; but the numbers of the other wheels are not given by Berthoud. Alexander, in his *Traité des Horloges*, thus describes the mechanism: 'This machine,' says he, 'cannot be of great utility, nor will it represent the motions of the planets with sufficient accuracy.'

1. 'The first wheel which moves all the rest is carried round by a fall of water which cannot have the requisite regularity.'

2. 'The movement is not regulated by a balance, pendulum, or fly.'

3. 'The motion of the sun completes the year

in exactly 365 days, which makes an error of twenty-five days in a century.'

4. 'The discs of the planets are made much too large in proportion to the sun.'

The last of these observations must necessarily constitute an objection in every instrument, where the ball for the sun is not made inconveniently bulky.

Passemant's planetary apparatus possessed considerable merit. It is thus described by Berthoud:—The clock is surmounted by a sphere, which it puts in motion according to the Copernican system. It was presented to the Academy of Sciences on the 23d of August 1749, by M. Passemant, the author of the calculations of the sphere. The gentlemen of the Academy, from the report of Messrs. Camus and Deparcieux, the committee named for the examination of this clock, certified that the revolutions of the planets were exact in it; as they did not find a degree of difference from the astronomical tables in more than 3000 years. Dauthiau, the clock maker who constructed this machine, employed twelve years upon it. It was presented to the king at Choisy, on the 7th of September 1750. His majesty testified his approval of it, and ordered a new case to be made for it after a design of his own choice. It is now at Versailles.

The sphere represents from day to day the different motions of the planets round the sun, viz. of Saturn, Jupiter, and Mars, the Earth, Moon, Venus, and Mercury, also their places in the zodiac, their configurations, stations, and apparent retrogradations with respect to the earth. Upon every circle which carries the orb of a planet is engraven the time of its revolution round the sun. The earth, during its annual revolution, makes its movement of parallelism, and the spectator views the sun passing through the signs and degrees of the zodiac; also through the months and their lesser divisions of time, indicating the seasons, the equinoxes, and solstices; besides it makes a rotation in twenty-four hours, being divided by twenty-four meridian lines: it has likewise a map of the principal places of the globe; so that the rising, setting, and meridian passage of the sun, together with its different elevations, and the continuance of day and night, may be seen for every principal place. The moon finishes her revolution round the earth in 29d. 12h. 44mi. 3sec., during which time are indicated her age and different phases; her progress through the signs of the zodiac; her nodes, her eclipses, and those of the sun with precision, viz. their place, size, and duration; besides the various altitudes, the time of rising, setting, and southing.

The clock beats seconds, which are indicated in the centre of the dial-face by a dead-beat escapement of a particular construction. This clock effects the equation by itself, by showing both apparent and mean time; it strikes the hours and the quarters of solar time, which it will repeat at pleasure. The movement of the striking part is by a spring, fusee, and chain; that of the clock by a weight of twenty pounds doubly suspended, which has a descent of eight inches in six weeks, and the going is not interrupted by winding up the weight. The pendulum rod consists

of bars of steel and brass, adjusted so as to keep the metallic ball always at the same distance from the point of suspension by the difference of their expansions; and by this difference a hand is made to point out the variation of temperature on a divided circle on the top of the rod, which forms a natural thermometer by the sole actions of metals.

On the front of the clock, over the face, is a planisphere marking the age and phases of the moon; in which are besides the day of the week, the names and days of the month and year; and though some months have twenty-eight, thirty, and thirty-one days each, yet the clock makes February to have twenty-nine days every fourth year for bissextile. The mechanism for showing the days of the year will point them out for 10,000 years by means of four indexes, revolving respectively in ten, 100, 1000, and 10,000 years. In this clock and sphere are three contrivances for disengagement: the first for the escapement, the second for the sphere to be detached from the clock work to move by a handle; and the third for detaching the diurnal motion of the earth; and the planets may have a quick motion by means of a corresponding handle. Thus the different portions may be disengaged from each other to make the necessary rectifications. The number of wheels and pinions employed in this mechanism amounts to sixty, some of which are in the interior part of it; the diameter of the sphere is one foot, and is surrounded by a cover of glass; the case of the clock is gilt with four faces, having glass covers neatly designed, well finished, and so exposed to view that all the mechanism may be seen. The whole height from the top of the sphere is seven feet. According to the report of Antide Janvier, who was employed to repair this instrument previously to its being placed in the gallery of the thuileries at Paris, the following are the numbers of the wheels and pinions, which are put down according to his method of noting them, and also their respective values in time.

The periodic revolution of the moon from a motion of forty-eight hours.

Pinions, $72 \cdot 25 \cdot 20 \cdot 41 \cdot 20$
Wheels, $75 \cdot 54 \cdot 44 \cdot 31 \cdot 73$ } = 27d. 7h. 43' 4". 58"

Revolution of Mercury from a motion of twenty-seven days seven hours, &c.

Pinions $31 \cdot 85$ } = 87d. 23h. 14' 15" 56"
Wheels $84 \cdot 101$ }

Annual revolution of the Earth from a motion of eighty-seven days twenty-three hours, &c.

Pinions $8 \cdot 35 \cdot 83$ } = 365d. 5h. 48' 58". 3"
Wheels $43 \cdot 44 \cdot 51$ }

Revolution of Venus from a motion of 365 days five hours forty-eight minutes, &c.

Pinions $53 \cdot 76$ } = 224d. 16h. 40' 30"
Wheels $42 \cdot 59$ }

Revolution of Mars from a motion of 365 days five hours forty-eight minutes, &c.

Pinions $53 \cdot 75$ } = 1y. 321d. 16h. 32' 11"
Wheels $84 \cdot 89$ }

Revolution of Jupiter from a motion of 365 days five hours forty-eight minutes, &c.

Pinions $9 \cdot 45$ } = 11y. 312d. 22h. 28' 0"
Wheels $49 \cdot 98$ }

Revolution of Saturn from a motion of 365 days five hours forty-eight minutes, &c.

Pinions $7 \cdot 40$ } = 29y. 156d. 12h. 46' 40"
Wheels $80 \cdot 103$ }

Revolution of the Moon, with respect to the nodes, from a motion of twenty-nine days twelve hours forty-four minutes three seconds.

Pinions $50 \cdot 67$ } = 27d. 5h. 5' 36"
Wheels $49 \cdot 63$ }

'It may be asked,' says Janvier, in a note to his report, 'where is the revolution of twenty-nine days twelve hours forty-four minutes three seconds which gives motion to this last movement, it being not contained in the preceding statement; but we have seen the periodic revolution, which consists of the time which the moon goes round the heavens; that interval, we know, is shorter than a synodic revolution; but this (synodic) revolution has no real existence, but by means of the earth's change of situation, whose orbit carries a wheel immoveably fixed at the centre of the moon's orbit, round which the moon revolves really in twenty-nine days twelve hours forty-four minutes three seconds; it is this wheel, then, which gives motion to the wheel-work which represent the eclipses with great accuracy. The last wheel of this movement carries a small dial plate, on which the moon shows her position with respect to her node; this dial carries besides an eccentric piece, which marks the moon's place below and above the plane of the ecliptic within the limits of her greatest latitude.'

The artificial globe serves as a useful instrument for determining, in a rough manner, without calculation, the arrangement of the heavenly bodies at particular times; their places being first ascertained from tables, or, in the case of the sun, merely from a scale of the globe's horizon, or on its surface. We have only to adjust the elevation of the pole of the globe in such a manner that its axis may form the same angle with its horizon, as the axis of the earth does with the real horizon of the place; then, finding a point on its surface corresponding to the place of the sun or planet, we may represent its apparent motion by the motion of this point, and the time occupied by that motion will be shown by the index of the globe: thus we may find the length of the day and night, and the time and place of rising and setting, and, by means of a graduated circle perpendicular to the horizon, we may measure the altitude of the sun or planet at any other time, and also its azimuth or the distance of this circle from the north or south point of the horizon. If we have a ring of any kind parallel to the horizon, and 33' below it, we may consider this ring as the apparent horizon, allowing for the effects of refraction; if it be still 15' or 16' lower, it will represent the rising or setting of the extreme margin of the sun or moon. We might also have a circle about 1° above either of these which might represent the sensible apparent horizon with regard to the moon, including the correction for her parallax; and a similar ring, placed still lower, would show the duration of twilight, or any supposition that might be formed respecting the depression of the sun required for producing total darkness. By means of the celestial globe the apparent motions of the fixed stars may be represented in a manner nearly similar, proper

Fig. 2.

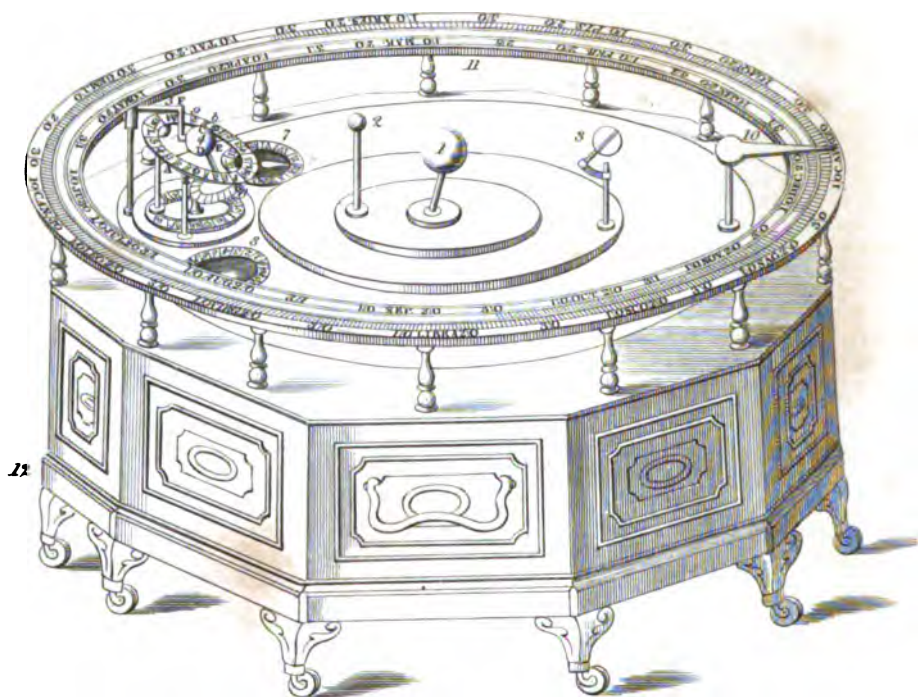
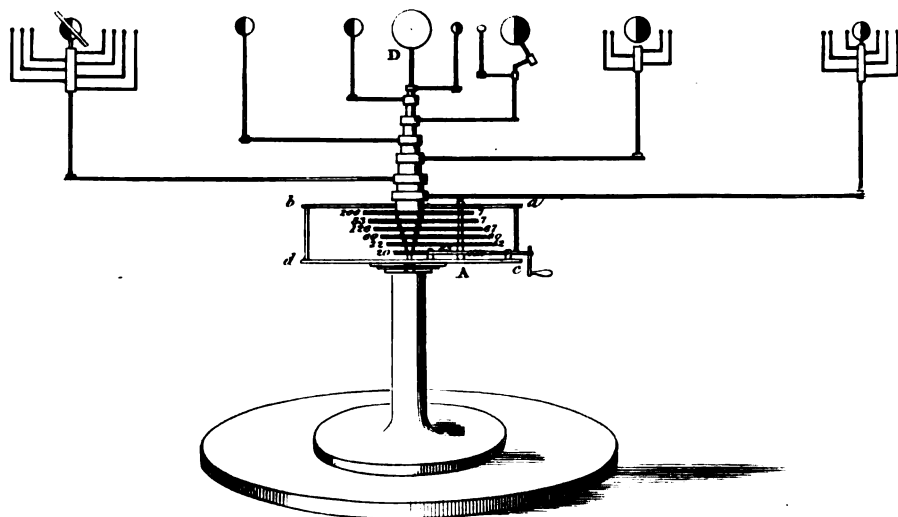


Fig. 1.



attention being paid to the situation of the sun in the ecliptic, as determining the corresponding time.

Many of these operations may also be performed with equal convenience with a planisphere, which is a stereographical projection of the globe on a plane surface. Professor Bode's planisphere comprehends in one view all the stars that are ever visible at Berlin: he has added to it a moveable circle, representing the horizon of that place, carrying with it the circles of altitude and azimuth, delineated on a transparent paper, which is adjusted, by graduations at the margin of the chart, to the day and hour for which he wished to ascertain the apparent place of the heavenly bodies. Any other chart of the stars, having the pole in its centre, may be applied to a similar use by cutting out a circle, or part of a circle, to represent the horizon of a place of which the latitude is given; and, if the stars are projected as is usual on two equal charts, they must have two equal arcs to represent the respective parts of the horizon belonging to them.

The common orrery or planetarium is represented at fig. 1, plate ORRERY. A brass frame *a b c d* is so contrived as to contain twelve wheels and pinions, actuating one another respectively on such a way as to produce the mean motions of the six primary planets, that have been long discovered, of which our earth is one. *A B* is a revolving arbor, pivotted into holes made in the upper and lower parts of the frame, and is made to revolve by means of an endless screw, acting with the lowest wheel of 83 teeth, which is made fast to it, as are also the five other wheels

and pinions with the number of teeth specified in the figure. *C D* is an upright stem of steel wire, screwed fast into the lower plate at *C*, and ascending through a large hole made in the upper plate, which it does not fill. The six wheels revolving round this stem have each a separate tube, to the inferior end of which they are respectively attached; and the tubes are so contrived that the exterior surface of the innermost forms a stem for the bore of the next largest, till all the six are fitted one within another round the stem of steel, which keeps them in a vertical position while they revolve separately with different velocities. The arbor *A B*, which receives its motion from the handle by the medium of the endless screw, is assumed as revolving in a year which may be either civil, sidereal, or tropical; but, whichever be the period assumed, the pairs of wheels that act together respectively will be so many fractions of that period. Thus, the lowest wheel of 83 teeth, on the annual arbor, will drive its fellow 20 with its tube, round in $\frac{20}{83}$ of a year, and the little arm that is fixed by friction on its superior end will perform a revolution round the sun in the same time. In like manner, the period of Venus will be performed in $\frac{8}{13}$ of the year; the earth in $\frac{11}{12}$ or one year; Mars in $\frac{2}{3}$; Jupiter in $\frac{1}{4}$; and Saturn in $\frac{1}{7}$; the driving wheels being the denominators of the fraction, and the driven ones the numerators, agreeably to our directions given under the article PLANETARY NUMBERS, for computing the value of wheel-work acting in this simple manner.

If we assume an exact solar year as the period of the first moving or driving wheels, then the fraction will produce the period subjoined, viz.

| | d. | h. | m. | s. |
|---|-------|----|----|----|
| Mercury will revolve $\frac{88}{265,342}$ of &c. or | 88 | 0 | 14 | 24 |
| Venus | 224 | 18 | 20 | 9 |
| Earth | 365 | 5 | 48 | 48 |
| Mars | 684 | 19 | 52 | 19 |
| Jupiter | 4330 | 17 | 30 | 3 |
| Saturn | 10738 | 2 | 54 | 43 |

If these periods be compared with the true periods, given under PLANETARY NUMBERS, it will be seen that the mean motions produced by this simple mechanism are far from being accurate; and the errors, by continual accumulation, will become sensible in a comparatively short space of time but where general representation only is aimed at, and the respective times of the phenomena exhibited by the planetarium are disregarded, this is the cheapest and simplest construction of a planetary machine that has yet been devised; and, where its imperfection can be dispensed with, its simplicity is no small recommendation. Still, however, the true places of the planets, depending on the equator as well as mean motions of these bodies, are not the places indicated by this planetarium, supposing its mean motions ever so accurate; nor are the motions of the five recently discovered planets attempted to be exhibited, which they might be by additional wheel-work, without altering the construction of the machine. For the use of those who are satisfied with the representation of mean motions only, we beg leave to suggest the numbers suitable for wheels that will produce the

revolutions of these five diminutive bodies also.

Let $\frac{88}{265,342}$ be taken for Vesta, $\frac{11}{12}$ for Juno, and $\frac{2}{3}$ for both Ceres and Pallas, with one tube only for these two pairs; and these wheels, acting in the same way that has been describing, will give the mean revolutions with as much accuracy as the present state of our knowledge of the motions of these little bodies will allow. The planet Herschel would require $\frac{1}{4}$ for its long period, which numbers are impracticable in a small machine; but for this planet a train might be substituted, such as will be described as forming a part of the following machine. When a planetarium of this common construction is fitted up, its appendages are usually alunarium and tellurium, separately adapted to the same stand, but in those the annual and lunar trains are never free from considerable errors.

The late Mr. Ferguson's ingenious orrery may be thus described:—

This machine shows the motions of the Sun, Mercury, Venus, Earth, and Moon; and occasionally the superior planets, Mars, Jupiter, and Saturn, may be put on; Jupiter's four satellites are moved round him in their proper times by a

small winch; and Saturn has his five satellites, and the ring which keeps its parallelism round the Sun.

In the centre, fig. 2, No. 1 represents the Sun, supported by its axis inclining almost 8° from the axis of the ecliptic; and turning round in twenty-five days and a quarter on its axis, of which the north-pole inclines towards the 8° of Pisces in the great ecliptic (No. 11), whereon the months and days are engraven over the signs and degrees in which the sun appears, as seen from the earth, on the different days of the year.

The nearest planet (No. 2) to the sun is Mercury, which goes round him in eighty-seven days twenty-three hours, or $87\frac{3}{4}$ diurnal rotations of the earth; but has no motion round its axis in the machine, because the time of its diurnal motion in the heavens is not known to us.

The next planet in order is Venus (No. 3), which performs her annual course in 224 days seventeen hours; and turns round her axis in twenty-four days eight hours, or in twenty-four and one-third diurnal rotations of the earth. Her axis inclines 75° from the axis of the ecliptic, and her north-pole inclines towards 20° of Aquarius, according to the observations of Bianchini.

Next without the orbit of Venus is the earth (No. 4), which turns round its axis, to any fixed point at a great distance, in twenty-three hours fifty-six minutes four seconds of mean solar time, but from the sun to the sun again in twenty-four hours of the same time. No. 6 is a sidereal dial-plate under the earth; and No. 7 a solar dial-plate on the cover of the machine. The index of the former shows sidereal, and of the latter solar time; and hence the former index gains one entire revolution on the latter every year, as 365 solar or natural days contain 366 sidereal days, or apparent revolutions of the stars. In the time that the earth makes $365\frac{1}{4}$ diurnal rotations on its axis, it goes once round the sun in the plane of the ecliptic, and always keeps opposite to a moving index (No. 10), which shows the sun's apparent daily change of place, and also the days of the months.

The earth is half covered with a black cap, for dividing the apparently enlightened half next the sun from the other half, which, when turned away from him, is in the dark. The edge of the cap represents the circle bounding light and darkness, and shows at what time the sun rises and sets to all places throughout the year. The earth's axis inclines $23\frac{1}{2}^\circ$ from the axis of the ecliptic; the north-pole inclines towards the beginning of Cancer, and keeps its parallelism throughout its annual course; so that in summer the northern parts of the earth incline towards the sun, and in winter from him: by which means the different lengths of days and nights, and the cause of the various seasons, are demonstrated to the sight.

There is a broad horizon, to the upper side of which is fixed a meridian semicircle in the north and south points, graduated on both sides from the horizon to 90° in the zenith, or vertical point. The edge of the horizon is graduated from the east and west to the south and north points, and

within these divisions are the points of the compass. From the lower side of this thin horizon-plate stand out four small wires, to which is fixed a twilight circle 16° from the graduated side of the horizon all round. This horizon may be put upon the earth (when the cap is taken away), and rectified to the latitude of any place: and then, by a small wire, called the solar ray, which may be put on so as to proceed directly from the sun's centre towards the earth's, but to come no farther than almost to touch the horizon, the beginning of twilight, time of sun-rising, with its amplitude, meridian altitude, time of setting, amplitude then, and end of twilight, are shown for every day of the year at that place to which the horizon is rectified.

The moon (No. 5) goes round the earth, from between it and any fixed point at a great distance, in twenty-seven days seven hours forty-three minutes, or through all the signs and degrees of her orbit, which is called her periodical revolution; but she goes round from the sun to the sun again, or from change to change, in twenty-nine days twelve hours forty-five minutes, which is her synodical revolution; and in that time she exhibits all the phases already described.

When the above-mentioned horizon is rectified to the latitude of any given place, the times of the moon's rising and setting, together with her amplitude, are shown to that place, as well as the sun's; and all the various phenomena of the harvest moon are made obvious to sight.

The moon's orbit (No. 9) is inclined to the ecliptic (No. 11), one-half being above and the other below it. The nodes or points at 0 and O lie in the plane of the ecliptic, and shift backward through all its signs and degrees in eighteen years and two-thirds. The degrees of the moon's latitude, to the highest at N L, north latitude, and the lowest at S L, south latitude, are engraven both ways from her nodes at O and O; and, as the moon rises and falls in her orbit according to its inclination, her latitude and distance from her nodes are shown for every day; having first rectified her orbit, so as to set the nodes to their proper places in the ecliptic, and then, as they come about at different, and almost opposite times of the year, and point twice towards the sun, all the eclipses may be shown for hundreds of years (without any new rectification), by turning the machinery backward for time past, or forward for time to come. At 17° distance from each node, on both sides, is engraved a small sun, and at 12° distance a small moon, which show the limits of solar and lunar eclipses; and when, at any change, the moon falls between either of these suns and the node, the sun will be eclipsed on the day pointed to by the annual index, and, as the moon has then north or south latitude, one may easily judge whether that eclipse will be visible in the northern or southern hemisphere, especially as the earth's axis inclines towards the sun, or from him at that time. And when, at any full, the moon falls between either of the little moons and node, she will be eclipsed, and the annual index shows the day of that eclipse. There is a circle of twenty-nine and a half equal parts, on the cover of the machine, on which an index shows the days of the moon's age.

A semi-ellipsis and semi-circle are fixed to an elliptical ring, which, being put like a cap upon the earth, and the forked part F upon the moon, shows the tides as the earth turns round within them, and they are led round it by the moon. When the different places come to the semi-ellipsis, A a E b B, they have tides of flood; and when they come to the semicircle, C E D, they have the tides of ebb; the index on the hour-circle (No. 7) showing the times of these phenomena.

There is a jointed wire, of which one end being put into a hole in the upright stem that holds the earth's cap, and the wire laid into a small forked piece which may be occasionally put upon Venus or Mercury, shows the direct and retrograde motions of these two planets, with their stationary times and places, as seen from the earth.

The whole machinery is turned by a winch or handle (No. 12), and is so easily moved that a clock might turn it without any danger of stopping.

To furnish a plate of the wheel-work of this machine would answer no purpose, because many of the wheels lie so behind others as to hide them from sight in any view whatsoever.

Simple as this apparatus may at first view appear, it is sufficiently accurate for furnishing a general notion of the arrangement of the planetary bodies and the phenomena of the seasons. It may be proper to add, that the vertical orreries of Bartlet and Walker are constructed on nearly similar principles.

OR'RIS, *n. s.* Lat. *orris*. A plant.

OR'ris, *n. s.* Fr. *orris*; Lat. *aureus*. A kind of gold lace.

ORSI (Francis Joseph), a learned cardinal, born in Tuscany, and raised to the purple by Clement XIII. He wrote an Ecclesiastical History, in 20 vols. 4to.

Orar (John Joseph), an ingenious philologer and poet, born at Bologna in 1652. He studied polite literature, philosophy, the civil law, and mathematics. His house was a kind of academy, where many persons of literature regularly assembled. He wrote many ingenious sonnets, pastorals, and other works, in Italian, and died in 1733.

ORSKAIA, a town of Asiatic Russia, in the government of Orenbourg, on the side on which the town of Orenbourg was originally built. It is distinguished by two forts of earth, near the Or, one of which is built upon a rock of jasper, of fine quality. A number of indifferent houses are built round the forts. The Asiatic caravans usually pass the Oural in their way to Orenbourg, near this place. 132 miles east of Orenbourg.

ORT, *n. s.* Scot. *ort*. Plural ORTS, in which form it chiefly occurs. According to Skinner, from Germ. *ort*, the fourth part; to Mr. Lye, from Irish *orda*, a fragment. Dr. Johnson adds, 'In Anglo-Saxon *ord* signifies the beginning; whence in some provinces odds and ends, for ords and ends, signify remnants, scattered pieces, refuse; from *ord* thus used probably came *ort*. Mr. Thomson refers us with yet greater probability to the Sax. *oþer æts*, over feedings. Waste food; refuse; something left or thrown away.

He must be taught and trained, and bid go forth;
A barren-spirited fellow, one that feeds
On abject *orts* and imitations. *Shakspeare.*

The fractions of her faith, *orts* of her love,
The fragments, scraps, the bits, and greasy reliques
Of her o'er-eaten faith, are bound to Diomedes. *Id.*

Much good do't you then;
Brave plush and velvet men
Can feed on *orts*, and safe in your stage-cloths,
Dare quit, upon your oaths,
The staggers, and the stage-wrights too.

Ben Jonson.

Like lavish ancestors, his earlier years
Have disinherited his future hours,
Which starve on *orts*, and glean their former field.

Young.

ORTEGIA, a genus of plants of the class triandria, and order monogynia; natural order twenty-second, caryophylleæ.

ORTELUS (Abraham), a celebrated geographer, born at Antwerp, in 1527. He was well skilled in languages and mathematics, and acquired such reputation by his skill in geography that he was called the Ptolemy of his time. He resided at Oxford in the reign of Edward VI., and came a second time into England in 1577. He was the author of several excellent astronomical and geographical works. He died at Antwerp in 1598.

ORTHITE, from Gr. *opθos*, right, is the name of a mineral so called because it always occurs in straight layers, generally in felspar. It resembles gadolinite, and, according to the analysis of Berzelius, consists of peroxide of cerium 19.5, protoxide of iron 12.44, protoxide of manganese 3.44, yttria 3.44, silica 32.0, alumina 14.8, lime 7.84, water 5.36. It is found in the mine of Finbo, in the vicinity of Fahlum in Sweden. The mine is situated in a vein of granite which traverses gneiss.

ORTHODOX, *adj.*

ORTHODOXAL,

ORTHODOXY, *n. s.*

Gr. *opθos*, and } *doxeo*, to think.
} Sound or right in
opinion: applied sometimes collectively to parties. Supposed to be so as in the phrase 'the orthodox': orthodoxy is soundness of doctrine or opinion.

Be you persuaded and settled in the new protestant religion professed by the church of England, which is as sound and orthodox in the doctrine thereof as any Christian church in the world.

Bacon.

The doctrine of the church of England, expressed in the thirty-nine articles, is so soundly, and so orthodoxly settled, as cannot be questioned without extreme danger to the honour of our religion. *Id.*

Eternal bliss is not immediately superstructed on the most orthodox belief; but, as our Saviour saith, If ye know these things, happy are ye if ye do them; the doing must be first superstructed on the knowing or believing, before any happiness can be built on it.

Hammond.

Origen and the two Clemens's, their works were originally *orthodox*, but had been afterwards corrupted, and interpolated by heretics in some parts of them.

Waterland.

Basil himself bears full and clear testimony to Gregory's *orthodoxy*. *Id.*

An uniform profession of one and the same *orthodox* verity, which was once given to the saints in the holy Apostles' days.

White.

I do not attempt explaining the mysteries of the Christian religion; since Providence intended there should be mysteries, it cannot be agreeable to piety, *orthodoxy*, or good sense, to go about it. *Swift*.

ORTHODROMICKS, *n. s.* } From *ορθος*
ORTHODROMY, *n. s.* } and *δρομος*.

The art of sailing in the arc of some great circle, which is the shortest or straightest distance between any two points on the surface of the globe.

ORTHOGON, *n. s.* } Gr. *ορθος* and *γωνια*,
ORTHOGONAL. } an angle. A right-angled figure; rectangular.

The square will make you ready for all manner of compartments; your cylinder for vaulted turrets and round buildings; your *orthogon* and pyramid, for sharp steeples. *Peacham*.

ORTHOGRAPHER, *n. s.* }

ORTHOGRAPHICAL, *adj.* }

ORTHOGRAPHICALLY, *adv.* }

ORTHOGRAPHY, *n. s.* }

French *orthographe*; Greek *ορθος* and *γραφο*, to write, or delineate. One who writes or spells a word correctly: orthographical is, rightly spelled: orthography, that part of grammar which teaches to spell words correctly; the practice of so doing; also the delineation of a building, particularly its elevation.

He was wont to speak plain, like an honest man and a soldier; and now he is turned *orthographer*, his words are just so many strange dishes. *Shakespeare*.

This would render languages much more easy to be learned, as to reading and pronouncing, and especially as to the writing them, which now as they stand we find to be troublesome, and it is no small part of grammar which treats of *orthography* and right pronunciation. *Holder*.

I received from him the following letter, which, after having rectified some little *orthographical* mistakes, I shall make a present of to the public. *Addison's Spectator*.

In the *orthographical* schemes there should be a true delineation and the just dimensions of each face, and of what belongs to it. *Mortimer*.

You have the *orthography* or upright of this ground plot, and the explanation with a scale of feet and inches. *Maron*.

In London they clip their words after one manner about the court, another in the city, and a third in the suburbs; all which, reduced to writing, would entirely confound *orthography*. *Swift*.

ORTHOGRAPHICAL PROJECTION OF THE SPHERE, that wherein the eye is supposed to be at an infinite distance; so called, because the perpendiculars from any point of the sphere will all fall in the common intersection of the sphere with the plane of the projection. See *GEOGRAPHY* and *MAPS*.

ORTHOGRAPHY is that part of grammar which teaches the nature of letters, and is one of the four great divisions of grammar. See *GRAMMAR*.

ORTHOGRAPHY, in geometry, the art of drawing or delineating the fore right plan of any object, and of expressing the heights or elevations of each part. It is called orthography on account of its determining objects by perpendicular lines falling on the geometrical plane.

ORTHO'PNOEA, *n. s.* Gr. *ορθοπνοια*; Fr. *orthopnie*. A disorder of the lungs, in which

respiration can be performed only in an upright posture.

His disease was an asthma oft turning to an *orthopnea*; the cause a translation of tartarous humours from his joints to his lungs. *Harvey*.

ORTHOPNOEA is a species of asthma, where there is such a difficulty of respiration that the patient is obliged to sit or stand upright in order to be able to breathe. See *MEDICINE*.

ORTHUS, in mythology, a dog which had two heads. He was the son of Typhon and Echidna, and the brother of Cerberus and the Hydra. He was kept by Geryon, and killed by Hercules.

ORTIVE, in astronomy, is the same with eastern. The ortive or eastern amplitude is an arch of the horizon intercepted between the place where a star rises, and the east point of the horizon, or point where the horizon and equator intersect.

ORTOLAN, *n. s.* Fr. *ortolan*; Ital. *hortolano*; from Lat. *hortus*. A very delicate and scarce little bird.

Nor ortolans nor godwits.

Cowley.

ORTOLAN. See *EMBERIZA*.

ORTON (Job), a celebrated nonconformist, was born at Shrewsbury in 1717. He was educated at the free-school of his native place, and under Dr. Doddridge, whose assistant he afterwards became. In 1741 he became minister of the Independent congregation at Shrewsbury; but in 1765, his health being in a delicate state, he was obliged to desist from preaching. He now fixed his residence at Kidderminster, and passed his time in various literary occupations until his death in 1783. Though Mr. Orton received the degree of doctor in divinity several years previous to his death, he never would be addressed by that title. His principal works are *Memoirs of Dr. Doddridge*; *Christian Zeal*, three Discourses; *Discourses on Eternity*; *Religious Exercises*; *Christian Worship*, three Discourses; *Sacramental Meditations*; *Summary of Doctrinal and Practical Religion*; *Exposition of the Old Testament*; *Discourses to the Aged*; *Letters to a young Clergyman*, &c.

ORTON, a market town of Westmoreland, eight miles S.S.W. of Appleby, and 276 from London. Its church is an extensive ancient building, with an old tower steeple, and there are two free schools in this town. Market day Wednesday.

ORTONA-A-MARE, a town and bishop's see of Naples, in the Abruzzo Citra, situated on a hill on the coast, between the Pescara and Sangro. It has a cathedral, with several other churches and convents, and its environs produce wine. It has a small harbour. Inhabitants 5700. Fifty miles east of Aquila, and 100 north of Naples.

ORTYGLIA, the birth place of Diana, was a beautiful grove of trees of various kinds, chiefly cypresses, near Ephesus. This place was filled with shrines and images. The priests of the goddess were eunuchs, and greatly respected by the people. A general assembly was held there yearly, and splendid entertainments were provided, and mystic sacrifices solemnised. The

Cenchrius ran through it; and above it was the mountain Solmissus. But the birth-place of Diana and its sanctity are now forgotten, and the groves and buildings which adorned it appear no more.

ORTOGIA, an island of Sicily, in the bay of Syracuse, which formed one of the four quarters of that great city. In this island the celebrated fountain Arethusa arose.

ORVIETO, a town in the States of the Church, Italy, situated on a steep hill. It is sixty miles N. N. W. of Rome, at the confluence of the Paglia and Chiana, and is the see of a bishop. The cathedral is a fine Gothic edifice, and contains some good sculptures and paintings. The only public institution worth notice is a college of Jesuits. Inhabitants 7000.

ORVILLE (James Philip), a learned critic, born at Amsterdam, of French parents, in 1696. He travelled into England, France, and Germany; and on his return, in 1730, he was made professor of history, eloquence, and Greek; but resigned in 1742. He wrote several learned dissertations in the *Observationes Miscellanæ*, a work of deep erudition. He died in 1743.

ORURO, a bleak but fertile province of Peru, bounded on the north by the province of Sicasica, east by Cochabamba, south and south-east by Paria, and west and north-west by Pacajes. It is very subject to tempests, and has numerous herds of cattle and Peruvian camels. It formerly had silver mines of considerable value, which are now in a great measure filled with water. In 1796 one individual obtained, we are told, even by the imperfect mode of amalgamation in use, a considerable gain from the residuum thrown away. Population 8000.

ORWELL, a river of England, which rises in the middle of Suffolk, where it is called Gipping; passes by Stow, Needham, and Ipswich, where it is named Ipswich Water, and, uniting with the Stour from Manningtree, forms the fine harbour of Harwich. See HARWICH.

ORYX, in zoology. See CAPRA.

ORYZA, rice, in botany, a genus of the digynia order, and hexandria class of plants, natural order fourth, graminæ: CAL. a bivalved uniflorous glume: COR. bivalved, nearly equal, and adhering to the seed. There is but one species, viz.

O. sativæ, common rice. This plant is greatly cultivated in most of the eastern countries, where it is the chief support of the inhabitants; and great quantities of it are brought into England and other European countries every year, as it is too tender to be produced in these northern countries without the assistance of artificial heat. It grows upon moist soils, where the ground can be flowed over with water after it is come up. So that whoever would cultivate it in this country should sow the seeds upon a hot-bed; and, when the plants are come up, they should be removed into pots filled with light rich earth, and placed in pans of water, which should be plunged into a hot-bed; and, as the water wastes, it must from time to time be renewed. In July these plants may be set abroad in a warm situation, still preserving the water in the pans, otherwise they will not thrive; and, toward the end

of August, they will produce their grain, which will ripen tolerably well, provided the autumn proves favorable. The leaves of rice are long, like the reed, and fleshy; the flowers blow on the top like barley: but the seed which follows is disposed in clusters, each of which is enclosed in a yellow husk, ending in a spiral thread. The seed is oblong, or rather oval, and white. Hasselquist gives the following description of the manner in which the Egyptians dress and separate it from the husks:—'It is pounded by hollow iron pestles of a cylindrical form, lifted up by a wheel worked by oxen. A person sitting between the two pestles pushes forward the rice when the pestles are rising; another sifts, winnows, and lays it under the pestles. In this manner they continue working it until it is entirely free from chaff and husks. When clean they add a thirtieth part of salt, and pound them together; by which the rice, formerly gray, becomes white. After this purification, it is passed through a fine sieve to part the salt from the rice; and then it is ready for sale.' See RICE.

OSACCA, a large city of Japan, and the port town of Meaco. It is situated at the head of a bay of this name, at the mouth of a considerable river, and is one of the most flourishing places in the empire. In the neighbourhood is an earth of a beautiful orange color, which is exported to all parts of Japan, for covering the houses. Twenty-five miles south-west of Meaco.

OSAGE, a river of Louisiana, which joins the Missouri, 133 miles from the Mississippi. It is very crooked, and navigable for boats about 600 miles.

OSBORN (Francis), an eminent English writer in the seventeenth century. He frequented the court, and was master of the horse to William earl of Pembroke. Upon the breaking out of the civil wars, he adhered to the parliament, and had several public employments conferred upon him. In the latter part of his life he lived at Oxford, in order to print several books, and to look after his son, for whom, by the favor of the parliament, he procured a fellowship in All Souls College. His Advice to a Son being complained of to Dr. John Tenant, vice-chancellor of Oxford, as of irreligious tendency, it was ordered that no bookseller or others should sell it, which, as usual in such cases, only made it sell the faster. He wrote also Historical Memoirs of the Reigns of Queen Elizabeth and King James I.; a Discourse on the greatness and corruption of the Church of Rome; a Discourse upon Machiavel, &c. He died in 1659.

OSCHEOCELE, *n. s.* Gr. *οσχεον* and *επλην*. A kind of hernia when the intestines break into the scrotum.

OSCHOPHORIA, a festival observed by the Athenians. It receives its name, *απο του φορειν τας οσχας*, from carrying boughs hung up with grapes, called *οσχα*. Its original institution is thus mentioned by Plutarch in Theseus:—Theseus, on returning from Crete, forgot to hang out the white sail, by which his father was to be apprised of his success. This neglect proved fatal to Ægeus, for he threw himself into the sea, and perished. Theseus no sooner reached the land than he sent a herald to inform his father

of his safe return, and in the mean time he began to make the sacrifices which he had vowed to make when he first set sail from Crete. The herald, on his entrance into the city, found the people in great agitation. Some lamented the king's death, while others, elated at the sudden news of the victory of Theseus, crowned the herald with garlands in token of their joy. The herald carried back the garlands on his staff to the sea shore; and, after waiting till Theseus had finished his sacrifice, he related the melancholy account of the king's death. Upon this the people ran in crowds to the city, showing their grief by cries and lamentations. From this circumstance, therefore, at the feast of Oschophoria, not the herald, but his staff was crowned with garlands, and all the people that were present exclaimed *ελεειν, ιε, ιε*, the first of which expresses haste, and the others a consternation or depression of spirits. The historian further mentions, that Theseus, when he went to Crete, did not take with him the usual number of virgins, but that, in the place of two of them, he took two youths of his acquaintance, whom he caused to pass for women, by disguising their dress, and by accustoming them to the ointments and perfumes of women, as well as by a long and successful imitation of their voice. The imposition succeeded; their sex was not discovered in Crete; and, when Theseus had triumphed over the Minotaur, he, with these two young men led a procession, with branches in their hands, in the same habit, which was still used at the celebration of the festival. The branches which were carried were in honor of Bacchus and Ariadne, or because they returned in autumn, when the grapes were ripe. Besides this procession, there was also a race in which young men only, whose parents were both alive, were permitted to engage. It was customary for them to run from the temple of Bacchus to that of Minerva, which was on the sea-shore. The place where they stopped was called *οσχοφοριον*, because the boughs which they carried in their hands were deposited there. The reward of the conqueror was a cup called *πενταλοα*, five-fold, because it contained a mixture of five different things; wine, honey, cheese, meal, and oil.

OSCI, an ancient people of Italy, who dwelt between Campania and the country of the Volsci, and assisted Turnus against Æneas.—*Tacit. Ann.* iv. c. 14.

OSCILLA, small images of wax or clay made in the shape of men or women, and consecrated to Saturn, to render him propitious. The word is sometimes used to signify a kind of masks scooped from the bark of trees, and worn by the performers of comedy in the ruder ages of Rome. In this sense we find it in *Virg. Geo.* ii. 386. It also signifies little heads or images of Bacchus, which the countrymen of old hung upon trees, that the face might turn every way, out of a notion that the countenance of this god gave felicity to themselves, and fertility to their vineyards. An allusion to this opinion and custom is also found in *Virgil, Geo.* ii. 388.

OSCILLATION, *n. s.* } Lat. *oscillum*. The
OSCILLATORY, *adj.* } act of moving back-
wards and forwards, or in the manner of a pendulum.

The actions upon the solids are stimulating or increasing their vibrations, or oscillatory motions.

Arbuthnot.

OS'CITANCY, *n. s.* } Lat. *oscitatio*.
OS'CITANT, *adj.* } Yawning; sleepiness;
OSCITA'TION, *n. s.* } hence, carelessness:
oscitation is the act of yawning.

Our *osceitant* lazy piety gave vacancy for them, and they will now lend none back again.

Decay of Piety.

If persons of circumspect piety have been overtaken, what security can there be for our reckless *oscitancy*?

Government of the Tongue.

It might proceed from the *oscitancy* of transcribers, who, to dispatch their work the sooner, used to write all numbers in cyphers. *Addison's Spectator.*

I shall defer considering the subject till I come to my treatise of *oscillation*, laughter, and ridicule.

Tatler.

OSIANDER (Adam), chancellor of the university of Tubingen, published a work entitled *Theologia Causalis; a System of Casual Theology*; containing the solution of dubious questions and cases of conscience, six vols. 4to. Tubingen, 1682.

OSIANDER (Andrew), a Lutheran divine, born in Bavaria, in 1498. He studied at Wirtemberg, and became professor of theology at Konigsberg. He denied the doctrine of imputed righteousness, which gave rise to a controversy between him and other Lutheran divines, and he died in 1552.

O'SIER, *n. s.* Fr. *osier, viter*. A tree of the willow kind, growing by the water, of which the twigs are used for basket work.

The rank of *osiers*, by the murmuring stream,
Left on your right hand brings you to the place.

Shakespeare.

Ere the sun advance his burning eye,
I must fill up this *osier* cage of ours
With baleful weeds and precious juiced flowers.

Id.

Car comes crowned with *osier*, segs, and weeds.

Drayton.

Bring them for food sweet boughs and *osiers* cut,
Nor all the winter long thy hay-rick shut.

May.

Like her no nymph can willing *osiers* bend,
In basket works, which painted streaks commend.

Dryden.

Along the marshes spread,
We made the *osier* fringed bank our bed.

Pope.

OSIER, in botany. See SALIX.

OSIRIS, in mythology, one of the gods of ancient Egypt, and generally supposed to mean the sun, or the mind actuating that luminary. Macrobius says that, in the hieroglyphic writings of ancient Egypt, 'Osiris was represented by a sceptre and an eye,' to denote that this god was the sun looking down from heaven on all things upon earth. Some of the ancients, however, and a few of the most learned moderns, have contended that, by Osiris, the Egyptians understood the Nile, or spirit of the Nile, whilst others have confounded him with the Grecian Bacchus. But though the original Osiris was undoubtedly the sun, or the intelligence actuating the sun, yet there was a secondary Osiris, who was said to be the founder of the Egyptian monarchy; and, as was customary in those days, having either received the name of the sun, or communicated his own to that luminary, was after his death

deified for the benefits which he had rendered to his country; and, being at first worshipped only as a demigod, was in process of time advanced to full divinity, and confounded with the sun. The Greeks, who, though original in nothing, were always prompted by their vanity to hold themselves out as the first of the nations, claimed this Osiris as their own, and pretended that he was the son of Jupiter and Niobe. See MYSTERIES.

OSMAN I., or OTHMAN I., emperor of the Turks, succeeded his uncle Mustapha I., who was deposed in 1618. He marched against the Poles in 1621, with a great army; but, being repeatedly defeated, concluded a disadvantageous peace, and returned home, where he was deposed by the janizaries, and Mustapha restored, who caused him to be strangled.

OSMIUM. A new metal lately discovered by Mr. Tennant among platina, and thus called by him from the pungent and peculiar smell of its oxide. For the mode in which he extracted it, see IRIIDIUM.

Its oxide may likewise be obtained in small quantity by distilling with nitre the black powder left after dissolving platina; when at a low red heat an apparently oily fluid sublimes into the neck of the retort, which on cooling concretes into a solid, colorless, semi-transparent mass. This, being dissolved in water, forms a concentrated solution of oxide of osmium. This solution gives a dark stain to the skin that cannot be effaced. Infusion of galls presently produces a purple color in it, which soon after becomes of a deep vivid blue. This is the best test of the oxide. With pure ammonia it becomes yellow, and slightly so with carbonate of soda. With lime it forms a bright yellow solution; but it is not affected either by chalk, or by pure magnesia. The solution with lime gives a deep red precipitate with galls, which is turned blue by acids. It produces no effect on solution of gold or platina; but precipitates lead of a yellowish-brown, mercury of a white, and muriate of tin of a brown color.

Oxide of osmium becomes of a dark color with alcohol, and after some time separates in the form of black films, leaving the alcohol without color. The same effect is produced by ether, and much more quickly.

It parts with its oxygen to all the metals except gold and platina. Silver, kept in a solution of it some time, acquires a black color, but does not deprive it entirely of smell. Copper, tin, zinc, and phosphorus, quickly produce a black or gray powder, and deprive the solution of smell, and of the property of turning galls blue. This black powder, which consists of the metallic osmium, and the oxide of the metal employed to precipitate it, may be dissolved in nitro-muriatic acid, and then becomes blue with infusion of galls.

If the pure oxide dissolved in water be shaken with mercury, it soon loses its smell, and the metal forms a perfect amalgam. By squeezing the superfluous mercury through leather, and distilling off the rest, a dark gray or blue powder is left, which is the osmium.

Exposed to a strong heat in a cavity in a piece

of charcoal, it does not melt; nor is it volatile if oxidation be carefully prevented. With copper and with gold it forms malleable alloys, which are easily dissolved in nitro-muriatic acid, and afford by distillation the oxide of osmium. The pure metal, previously heated, did not appear to be acted upon by acids. Heated in a silver cup, with caustic alkali, it combined with it, and gave a yellow solution, similar to that from which it was procured. From this solution acids separate the oxide of osmium.—*Philosophical Transactions.*

OSMUNDA, in botany, moonwort; a genus of the order of filices, and class cryptogamia. There are several species; the most remarkable is the

O. regalis, osmund royal, or flowering fern. This is a native of Britain, growing in putrid marshes. Its leaf is doubly winged, bearing bunches of flowers at the ends. The root boiled in water is very slimy; and is used in the north to stiffen linen, instead of starch. Some of the leaves only bear flowers.

OSNABRUCK, a province in the S. S. W. of Hanover, between the grand duchy of Oldenburg and Westphalia. Its form is an irregular oblong, having its length from south to north, and an area of about 920 square miles. The majority of the people are Lutherans, and the rest Catholics. Jews, by the old constitution, were not tolerated here. The peasants were long in a singular state of vassalage here, the proprietor of the soil sharing the property, at the father's death, with the children. A large proportion of this province consists of heath, and sandy eminences; but the want of wood is supplied by turf from the bogs, and the produce of the coal mines. The chief corn raised is rye, oats, barley, and buck-wheat. Inferior hemp and flax are also raised; and great quantities of the coarse linen, known by the name of Osnaburgs, are manufactured here. The see is of very remote antiquity, having been founded by Charlemagne. After the reformation, most of the inhabitants embracing the Lutheran faith, it was agreed at the treaty of Westphalia that the bishop should be alternately a Catholic and a Lutheran, the chapter being left at liberty in their choice of the former, but limited in the election of a Protestant to the family of Brunswick-Luneburg. The Catholic bishop was generally an aged member of the chapter, and the Protestant a young prince; so that since 1648 the principality has been much longer subject to the house of Brunswick than to the Catholics. Neither party, however, were able to introduce any change, until, in 1802, it was agreed that the bishopric should devolve in perpetuity on the house of Hanover. It was annexed in 1807 to the kingdom of Westphalia, but restored to Hanover in 1814. The public revenue is between £50,000 and £60,000. It is divided into six baliwics. Population 126,000.

OSNABRUCK, or OSNABURG, the capital of the principality of this name, is situated on the river Hase. It is divided into the Old and New town (both irregularly built), and surrounded with old walls and ditches, and entered by five gates. The best buildings are the cathedral and

town house, in which was concluded the peace of Westphalia in 1648, at the same time as at Munster, Osnaburg being the place for the conferences of the Protestant ambassadors. The quarter called the Freyung is a favorite resort, and has a very pleasant promenade. Other public buildings are two Lutheran, and two Catholic churches, a Lutheran orphan house, four hospitals, a workhouse, and the Catholic and Lutheran gymnasiums. Here are manufactories of coarse woollen, leather, and tobacco; several linen bleach-fields, and the Osnaburgs of the surrounding country are brought here to be measured and stamped. Two miles off is Ebersburg, with a botanical garden containing some curious exotics. Inhabitants 9300. Seventy miles west of Hanover, and twenty-eight north-east of Munster. Long. 2° 1' 11" E., lat. 52° 16' 32" N.

OSORIO, or **OSORIUS** (Jerom), was born of a noble family in Lisbon, in 1500. He was educated at the university of Salamanca, and afterwards studied at Paris and Bologna. On his return to Portugal he gradually rose to the bishopric of Sylves, to which he was appointed by Catherine of Austria, regent in the minority of Sebastian. At the request of cardinal Henry, of Portugal, he wrote his History of King Emanuel, and the Expedition of Gama; which his great contemporary Camoens made at the same time the subject of his immortal *Lusiad*. Osorius used many arguments to dissuade Sebastian from his unfortunate expedition into Africa, and felt so deeply the miseries which befell the Portuguese, after that fatal event, that his grief accelerated his death. He died in 1580. His various works were published at Rome in 1592, by his nephew, in 4 vols. folio.

OSORIUS (Jerome), nephew of the preceding, was also a man of letters. He was canon of Evora, and wrote the life of his uncle, and several theological works.

OSPRAY, *n. s.* Lat. *ossifragia*, of which the word is a corruption. See **OSSIFRAGE**. The sea-eagle. Dr. Johnson, to explain the extract from Shakspeare, adds, 'of which it is reported, that when he hovers in the air, all the fish in the water turn up their bellies, and lie still for him to seize which he pleases.'

Among the fowls shall not be eaten, the eagle, the ossifrage, and the *aspray*. Numbers, xi. 13.

I think he'll be to Rome,
As is the *aspray* to the fish, who takes it
By sovereignty of nature.

Shakspeare. *Coriolanus*.

OSPRAY, or **OSPREY**. See **FALCO**.

OSSA, a lofty mountain of Thessaly, near the Peneus, which runs between this mountain and Olympus; famous in fabulous history as one of those which the giants piled up to facilitate their attack on heaven. (Homer, Virgil, Horace, Seneca, Ovid). It was once the residence of the Centaurs, and was formerly joined to mount Olympus; but Hercules is fabled to have separated them, and made between them the celebrated valley of Tempe. This separation was probably effected by an earthquake which happened about A. A. C. 1885.

OSSAT (Arnauld de), born in the diocese of

Auch in 1536, of mean parentage, was taken notice of by a gentleman in the diocese, who made him study with his ward, the lord of Castlenau de Magnoc. He studied the law at Dijon under Cujace, and applied himself to the bar at Paris. He was secretary at Rome to M. de Foix, archbishop of Thoulouse; to cardinal Este; and afterwards to cardinal de Joyeuse, by the French king's express command. After rising to the highest dignities, both in church and state, in 1599 he was created a cardinal by pope Clement VIII. He died in 1604. An eminent French writer gives him the following character: — 'He was a man of great penetration; applied himself so closely to business, and was so judicious in forming his resolutions, that it is almost impossible to find out one false step in the many negotiations in which he was concerned.' His works, and especially his letters, have been much esteemed.

OSSELET, *n. s.*

Fr. *osselet*; dim. of Lat.

OSICLE, *n. s.*

ossis, ossiculum. Osselet

OSIFIC, *adj.*

is a term in farriery, for a

OSSIFICATION, *n. s.*

small hard substance that

OSSIFRAGE, *n. s.*

grows in a horse's knee

OSSIFY, *v. a.*

among the small bones:

OSSIVOROUS, *adj.*

ossicle is, a small bone:

OSSUARY, *n. s.*

ossific, having the power

or tendency to make bone or bony substance: ossification, act of growing into or becoming bone: the ossifrage is a kind of eagle, so called because reported to break the bones of its prey for the marrow: to ossify is, to change to bone: ossivorous is devouring bones: ossuary, a charnel or bone house.

There are three very little bones in the ear, upon whose right constitution depends the due tension of the tympanum; and if the action of one little muscle, which serves to draw one of these *ossicles*, fixed to the tympanum, be lost or abated, the tension of that membrane ceasing, sound is hindered from coming into the ear.

Holder.

The bore of the gullet is not in all creatures alike answerable to the body or stomach: as in the fox, which feeds on bones, and swallows whole or with little chewing; and next in a dog and other *ossivorous* quadrupeds, it is very large.

Derham.

If the caries be superficial, and the bone firm, you may by medicaments consume the moisture in the caries, dry the bone, and dispose it, by virtue of its *ossific* faculty, to thrust out callus, and make separation of its caries.

Wise man.

Ossifications or indurations of the artery, appear so constantly in the beginnings of aneurisms, that it is not easy to judge whether they are the cause or the effect of them.

Sharp.

The dilated aorta every where in the neighbourhood of the cyst is generally *ossified*.

Sharp's Surgery.

OSSIAN, a celebrated Celtic poet, who is supposed to have flourished about the end of the second or beginning of the third century, and to have been the son of Fingal a Caledonian chief. Little, however, is known of him beside what is contained in those of his poems which were collected, translated, and published by Mr. M'Pherson. Fingal is said to have commanded the Caledonians during the invasion of Severus; and it appears, from his poems, that, in one of his early expeditions to Ireland, Ossian had fallen in love with and married Eivirallin, daughter to

Branno, petty king of Lego. This Eirallin brought him his son Oscar, whose exploits he celebrates in many of his poems, and whose death he laments in the first book of *Temora*. Eirallin died some time before Oscar (Fingal. b. iv.), who seems to have been her only child; and Ossian did not marry afterwards: so that his posterity ended in the death of Oscar; who seems to have died as he was about to be married to Malvina, the daughter of Toscar. This celebrated maid remained with her intended father-in-law while she lived, and paid him every attention which his age demanded. It is not certain at what age Ossian died; but from his having been long blind with years, and from the many contrasts between his present and past situation, in poems composed, as it would appear, at a considerable distance of time from each other, it is most likely he lived to an extreme old age. The current tradition is, that he died in the house of a Culdee, called the Son of Alpin, with whom he is said to have held several conferences about the doctrines of Christianity. The principal residence of Ossian was in the vale of Cona, now Glenco, in Argyleshire. His poems relate many of his expeditions to Ireland, Scandinavia, Clyde, and Tweed or Tuetha. His exploits on these occasions, after making a large allowance for poetical exaggeration, show him to have been no less a warrior than a poet. Such is the brief amount of our knowledge respecting Ossian, and the authenticity even of these particulars has been disputed by men of the highest literary eminence. As the controversy that has arisen on the subject cannot be narrated with perspicuity, without entering more minutely into detail than our plan will allow, we shall avoid it entirely. Dr. Hugh Blair in a private letter to Mr. William Morison, bookseller, Perth, dated Summerfield, 7th October, 1800, gives the following opinion upon it, entitled to considerable respect:—‘That Mr. M’Pherson may not have given an exact and scrupulous translation of all these poems: that he may have joined and collected scattered pieces into one, and have omitted some pieces that were in the original, is what I never called in question. But that they are not poems of his composing, but are really and truly in the substance of them genuine, original and ancient Gaelic songs, well known to many natives of the Highlands, is what, from innumerable circumstances which I had access to trace, I am as fully convinced, and as certain of, as I can be of any thing under the sun.’ An Enquiry into the Authenticity of the Poems ascribed to Ossian, was first published by Mr. W. Shaw, author of a Gaelic grammar and dictionary, in 1781. He was answered by Mr. John Clarke, a member of the society of Scottish antiquaries, and a translator of Caledonian poetry. Mr. Laing more recently attacked the credit of the Ossianic poetry, and was opposed by Mr. Archibald Macdonald and Dr. Patrick Graham. See Report of the Highland Society, published by Henry M’Kenzie, Esq., and the pieces attached to the Gaelic poems, published as the originals of Ossian, with a literal Latin version, by Robert M’Farlan, A.M. 3 vols. 8vo.

OSSIFICATION, in the animal economy, is

the formation of the bones, but more particularly the conversion of parts naturally soft to the hardness and consistency of bones; as the blood of old men, which by a long course of circulation becomes in a manner unfit for the common office of nutrition, is apt to ossify, and convert into bones, many of the tendons and ligaments, and even the coats of the vessels themselves, whose substance being next to the bones the most compact, admits only of the smallest particles of the blood, which therefore soonest become osseous, as they are frequently found. Dr. Nesbit’s opinion of ossification is, that in the blood, or a fluid secreted from it, there is an ossifying juice, having particles which are not apparent: that, whenever nature designs an ossification between membranes, or within a cartilage, she occasions a more than usual afflux of this fluid; which so much distends the vessels which were before invisible as to make them capable of receiving the red globules of blood, which are always to be seen near to the place where ossification is begun. In this blood, gritty bony particles may be felt by the point of a knife, which have been formed by the attraction and cohesion of the particles of the ossifying juice obstructed, along with other grosser fluids, in the beginning of the vessels prepared to receive reflux juices.

OSSUNA, a large inland town of Andalusia, Spain, in the province of Seville. It has a collegiate church, fifteen monasteries and convents, and three hospitals. It had formerly a university, now suppressed, and is a place of great antiquity. In a military sense it possesses strength, principally from its neighbourhood being destitute of water, while in the town is a good spring, a circumstance which obliged Cæsar, when he besieged it, to bring from a great distance the provisions and water for his army. Inhabitants 15,000. Forty-eight miles east of Seville, and twenty-eight W. N.W. of Antequera.

OSTADE (Adrian Van), an eminent Dutch painter, born at Lubec, in 1610. He was a disciple of Francis Hals. The subjects of this painter were always of the low kind, having the same ideas as Teniers; but, though Ostade copied nature as it appeared in the lower class of mankind, yet there is so much spirit in his compositions, such truth, nature, life, and delicacy of pencil, that, even while many of his objects are in some respects disgusting, a spectator cannot forbear to admire his genius and execution. His pictures are so transparent and highly finished, that they have the lustre and polish of enamel, being at the same time warm and clear. They have frequently a force superior to Teniers, and are always more highly finished; though it must be acknowledged that Teniers grouped his objects better, and showed more skill in the disposition of his design than Ostade. He perfectly understood the principles of chiaro-obscuro, and introduced his lights and shadows with so much judgment that every figure seems animated; it might, however, be wished that he had not designed his figures so short. His tone of coloring is exquisitely pleasing and natural; his touch light and wonderfully neat; and throughout all his works there is a peculiar and uncommon transparency. The figures of Ostade

were so universally admired for their lively expression, that several of the most eminent among his contemporary artists solicited him to paint the figures in their landscapes; which at the present day contribute greatly to their value. His works are very scarce, especially those of his best time and manner; and, when the genuine productions of Ostade are to be purchased, no price is accounted too exorbitant for them. This clever artist produced many etchings from his own designs that are very deservedly admired. He died in 1685, aged seventy-five.

OSTEN'SIBLE, *adj.* } Lat. *ostendo*. Pro-
OSTEN'SIVE. } per, or intended, to be shown.

His *ostensible* motive was the embarkation of the troops; but it is more than probable that some underplot engaged his attention. *Swift.*

OSTENT', *n. s.* } Fr. *ostentateur*;
OSTENTA'TION, } Lat. *ostentum*, *os-*
OSTENTA'TIOUS, *adj.* } *tentatio*. Show;
OSTENTATIOUSLY, *adv.* } manner; portent;
OSTENTA'TIOUSNESS, *n. s.* } omen; appearance;
OSTENTA'TOUR. } Shakespeare uses it

for token or sign: ostentation is, outward show; mere show or display; ambitious or boastful display; all the other derivatives following this sense: ostentatour, a needless Gallicism for a boaster.

To stirre our zeales up, that admired, whereof a fact so cleane

Of all ill as our sacrifice, so fearfull an *ostent*,
Should be the issue. *Chapman.*

Be merry, and employ your chiefest thoughts
To courtship and such fair *ostents* of love
As shall conveniently become you there. *Shakespeare.*

Use all the observance of civility,
Like one well studied in a sad *ostent*,
To please his grandam.

Id. Merchant of Venice.

The king would have me present the princess with some delightful *ostentation*, show, pageant, antick, or firework. *Shakespeare.*

If these shows be not outward, which of you
But is four Volscians?

—March on my fellows;
Make good this *ostentation*, and you shall
Divide in all with us. *Id. Coriolanus.*

Latinus, frighted with this dire *ostent*,
For council to his father Faunus went;
And sought the shades renowned for prophecy,
Which near Alburnia's sulphurous fountain lie. *Dryden.*

Your modesty is so far from being *ostentatious* of the good you do, that it blushes even to have it known; and therefore I must leave you to the satisfaction of your own conscience, which, though a silent panegyric, is yet the best. *Id.*

They let Ulysses into his disposition, and he seems to be ignorant, credulous, and *ostentatious*. *Broome.*

If all these secret springs of detraction fail, yet a vain *ostentation* of wit sets a man on attacking an established name, and sacrificing it to the mirth and laughter of those about him. *Addison's Spectator.*

He knew that good and bountiful minds were sometimes inclined to *ostentation*, and ready to cover it with pretence of inciting others by their example, and therefore checks this vanity: Take heed, says he, that you do not your alma before men, to be seen. *Atterbury.*

With all her lustrre, now, her lover warms;
Then out of *ostentation*, hides her charms. *Young.*

The great end of the art is to strike the imagination. The painter is therefore to make no *ostentation* of the means by which this is done; the spectator is only to feel the result in his bosom. *Reynolds.*

But the mind that is fit to be spoken (if I may express myself so strangely), ought to be free from pride, *ostentation*, and ill-nature; for, from these hateful passions, the bluntness here alluded to may generally be derived. *Beattie.*

OSTEOCOPE, *n. s.* } Fr. *osteocope*; Gr.
OSTEOLOGY. } *οστειον* and *κοπη*.

Pains in the bones or surrounding membranes: osteology is a description of the bones, or the science that describes them.

Richard Farlow, well known for his acuteness in dissection of dead bodies, and his great skill in *osteology*, has now laid by that practice. *Tatler.*

OSTEOCOLLA, *οστεocolλα*, in natural history, a white or ash-colored sparry substance, in shape like a bone. It is found in long, thick, and irregularly cylindric pieces, which are in general hollow, but are sometimes filled up with a marly earth, and sometimes contain within them the remains of a stick, round which the osteocolla had been formed; but, though it is plain from thence that many pieces of osteocolla have been formed by incrustations round sticks, yet the greater number are not so, but are irregularly tubular, and appear to be formed of a flat cake, rolled up in a cylindric shape. The osteocolla is found of different sizes, from that of a crow-quill to the thickness of a man's arm. It is composed of sand and earth, which may be separated by washing the powdered osteocolla with water, and is found, both in digging and in several brooks, in many parts of Germany and elsewhere. It is called *hammosteus* in many parts of Germany. It has this name in these places from its always growing in sand, never in clay, or any solid soil, nor even in gravel. Where a piece of it any where appears on the surface they dig down for it, and find the branches run ten or twelve feet deep. They usually run straight down, but sometimes they are found spreading into parts near the surface, as if it were a subterraneous tree, whose main stem began at twelve feet deep, and thence grew up in a branched manner till met by the open air. The main trunk is usually as thick as a man's leg, and the branches that grow out from it are thickest near the trunk, and thinner as they separate from it. The thinnest are about the size of a man's finger. The people employed to collect it, when they cannot find any mark of it on the surface, search after the specks of white, or little lumps of whitish soft matter, which they find lying in various parts on the top of the sand. These always lead them, either to a bed of perfect osteocolla, or to some in the formation. If they miss it, they still find a substance like rotten wood; which, when traced in its course, is found to proceed from a main trunk, at the depth of that of the osteocolla, and to spread itself into branches in the same manner. The diggers call this substance the flower of osteocolla or *hammosteus*. What the rotten substance resembling the decayed branches of trees is, we cannot determine, unless it really be such; but the opinion of the common people, that it is the root of something, is absurd; be-

cause its thickest part always lies at the greatest depth, and the branches all run upwards. The osteocolla is a marly spar, which concretes round this matter; but what it is that determines it to concretes nowhere on the same ground but about these branches, it is difficult to say. The rottenness of this substance, which forms the basis of the osteocolla, renders it very liable to moulder and fall away; and hence it is that we usually see the osteocolla hollow. Sometimes it is found solid; but in this case there will be found to have been a vegetable matter serving as its basis; and, instead of one branch, it will be found in this case to have concreted about a number of fibres, the remains of which will be found in it on a close examination.

OSTERVALD (John Frederick), a celebrated Protestant divine, born at Neufchatel in 1663, and descended from an ancient family. He made such rapid progress in his studies, that he became M. A. at Saumur before he was sixteen years of age. He afterwards studied at Orleans and at Paris. On his return to Neufchatel, in 1699, he became professor of divinity and pastor of the church there; and contracted a strict friendship with the celebrated John Alphonsus Turretin of Geneva, and the illustrious Samuel Werenfels of Basil. The union of these three divines, which was called the triumvirate of the divines of Switzerland, lasted till his death. Mr. Osterwald acquired the highest reputation by his zeal in instructing his disciples, and restoring ecclesiastical discipline. He wrote many books in French, the principal of which are, 1. A Treatise concerning the Causes of the present Corruptions of Christians, and the remedies, which was translated into English, and has been often published; 2. A Catechism, or Instruction in the Christian Religion, which has been translated into German, Dutch, and English; and the Abridgment of the Sacred History, which he prefixed to it, was translated and printed in Arabic, to be sent to the East Indies, by the Society for the Propagation of the Gospel, established in London, who admitted him an honorary member; 3. A Treatise against Impurity; 4. An edition of the French Bible of Geneva, with Arguments and Reflections, in folio; 5. *Ethica Christiana*; 6. *Theologiæ Compendium*, &c. He died in 1747. He had a son, who was pastor of the English church at Basil, and maintained the reputation of his father. He published a work, which was much esteemed, entitled *Les Devoirs des Communions*.

OSTIA, an ancient and celebrated town of Italy, in Campagna, at the mouth of the Tiber, sixteen miles south-west of Rome. It was built by Ancus Martius, the fourth king of Rome, and was called Ostia Tiberina, i. e. the two mouths of the Tiber, which were separated by the Holy Island, an equilateral triangle, whose sides were each of them computed at two miles. The colony of Ostia was founded immediately beyond the south or left, and the port immediately beyond the north or right, branch of the river; and the distance between their remains measures something more than two miles. In the time of Strabo the sand and mud deposited by the Tiber had choked the harbour of Ostia; the

progress of the same cause has added much to the size of the Holy Island, and gradually left both Ostia and the port at a considerable distance from the shore. The dry channels and the large estuaries mark the changes of the river and the efforts of the sea. Its port was one of the most stupendous works of the Roman magnificence, and it was a long time one of the best towns on the coast; but having been destroyed by the Saracens, and the harbour choked up, it has never since been able to recover its importance. There were salt-works in Ostia, called *Salinæ Ostienses*, as early as the reign of Ancus Martius (Livy); from which the Via Salaria took its name. It gave name to the gate of Rome called *Ostiensis*.

OSTIA, an unhealthy modern town in the States of the Church, Italy, situated near the influx of the Tiber into the Mediterranean. It is the see of a bishop, and in the neighbourhood are extensive salt-works, which supply a great part of the Ecclesiastical States. Population 4000. The ancient town of Ostium stood between this place and the sea. It appears to have been three or four miles in circuit. Fourteen miles south-west of Rome.

OSTIARY, *n. s.* Lat. *ostium*. The opening at which a river disembogues itself.

It is received, that the Nilus hath seven *ostiaris*, that is, by seven channels disburtheneth itself unto the sea. *Brownie.*

OSTLER, *n. s.* } Fr. *hostelier*. A person
OSTLERY. } who has charge of the horses
at public stables: the ostlery is his place of abode.

The smith, the *ostler*, and the boot-catcher, ought to partake. *Swift.*

OSTRACISM, *n. s.* Gr. *οστρακισμος*; Fr. *ostracisme*. A manner of passing sentence, in which the note of acquittal or condemnation was marked upon a shell which the voter threw into a vessel. Banishment; public censure.

Virtue in courtiers' hearts

Suffers an *ostracism* and departs;

Profit, ease, fitness, plenty, bid it go,

But whither, only knowing you, I know. *Donne.*

Public envy is an *ostracism*, that eclipseth men when they grow too great; and therefore it is a bribe to keep them within bounds. *Bacon's Essays.*

Hyperbolus by suffering did traduce

The *ostracism* and shamed it out of use. *Cleaveland.*

This man, upon a slight and false accusation of favouring arbitrary power, was banished by *ostracism*; which in English would signify, that they voted he should be removed from their presence and council for ever. *Swift.*

OSTRACISM, in Grecian antiquity, denotes the banishment of persons whose influence excited the jealousy of the people of Athens, lest they should attempt any thing against the public liberty. This punishment was called *ostracism*, from the Greek word *οστρακον*, which properly signifies a shell; but, when applied to this object, it is used for the billet on which the Athenians wrote the names of the citizens whom they intended to banish, which was a piece of baked earth in the form of a shell: the person who proposed the law was its first victim; but

as to his name, and the time of its establishment, the ancients differ extremely. Many think that ostracism owes its origin to very remote times. The punishment of ostracism was inflicted by the Athenians when their liberty was in danger. When jealousy or ambition had sowed discord among the chiefs of the republic, and different parties were formed, which threatened a revolution, the people assembled to propose measures proper to be taken, to prevent the consequences of a division, which in the end might be fatal to freedom. A decree was made, by which a day was fixed to proceed to the sentence of ostracism. Then they who were threatened with banishment omitted no art to gain them the favor of the people. Some time before the meeting of the assembly, a wooden enclosure was raised in the forum, with ten doors, as many as there were tribes in the republic; and, when the appointed day was come, the citizens of each tribe entered at their respective doors, and threw into the middle of the enclosure the small brick on which the citizen's name was written whose banishment they voted. The archons and the senate presided at this assembly, and counted the billets. He who was condemned by 6000 of his fellow-citizens was obliged to quit the city within ten days; for 6000 voices, at least, were requisite to banish an Athenian by ostracism. The Athenians, without doubt, foresaw the inconveniences to which this law was subject; but they chose rather, as Cornelius Nepos has remarked, sometimes to expose the innocent to an unjust censure, than to live in continual alarms. Yet, as they were sensible that the injustice of confounding virtue and vice would have been too flagrant, they softened, as much as they could, the rigor of ostracism. It was not aggravated with the circumstances which were most dishonorable and shocking in the ordinary mode of exile. They did not confiscate the goods of those who were banished by ostracism. They enjoyed the produce of their effects in the places into which they were banished; and they were banished only for a certain time. But, in the common banishment, the goods of the exiles were always confiscated, and no hopes were given them of ever returning to Athens.

OSTRACITES, or fossile oysters, are common in many parts of England. They are of various shapes and kinds; and the name is by some authors used for the shell itself, when preserved in its native state and condition; as is the case with those about Woolwich and Blackheath; and by others for the stone cast or formed in those shells, or in cavities whence they have been washed away and dissolved: in both these cases the stone carries the exact resemblance of the shell, even in its nicest lineaments; in the first case, bearing every mark of the inside; in the other, of the outer surface. We have this stone in great plenty in many parts of England; and it is famous, in some places, for its reputed virtue in cases of gravel.

OSTREA, the oyster, in zoology, a genus belonging to the order of *vermes testacea*. The shell has two unequal valves; the *cardo* has no teeth, but a small hollowed one with transverse lateral streaks. There are numerous species,

principally distinguished by peculiarities in their shells. The common oyster is reckoned an excellent food; and is eaten both raw and variously prepared. The character of the genus, in the words of Barbut, is: 'The animal is a tethys; the shell bivalve, unequivalve, with something like ears; the hinge void of teeth, with a deep oval hole, and transverse streaks on the sides. There is no womb nor anus.' This sea fish occupies in the scale of nature one of the degrees the most remote from perfection; destitute of defensive weapons and progressive motion, without art or industry, it is reduced to mere vegetation in perpetual imprisonment, though it every day opens regularly to enjoy the element necessary to its preservation. The animal figure, and the springs of its organisation, are scarcely discernible through the coarse and shapeless mass; a ligament placed at the summit of the shell serves as an arm to its operations. Oysters are reputed to be hermaphrodites; the spawn, which they cast in May, adheres to the rocks and other matters at the bottom of the sea; and, in the space of twenty-four hours, is provided with shells, in which are contained other oysters, that never leave the spot on which they were fixed till the greedy fisherman tears them from the element. The green oysters, eaten at Paris, are commonly brought from Dieppe. Their color is owing to the care taken to bed them in creeks encompassed with verdure, whence they acquire their delicacy. Common oysters should be fresh, tender, and moist. The most esteemed are those caught at the mouths of rivers, and in clear water. Great account is made of oysters from Brittany; but still greater of those that come from Marennes in Saintonge. Preference is given to those that are edged with a small brown fringe, or beard, which epicures call fecundated oysters; but that these are females is a mistake. The want of fresh water renders oysters hard, bitter, and unpalatable. Mud and sea-weeds destroy them in their very birth; galangal root, muscles, scollops, sea-stars, and crabs, are formidable enemies to the oyster. There are found in Spain red and russet-colored oysters; in Illyria brown colored, with the flesh black; and, in the Red Sea, of the colors of the Iris. Oysters of the mangle tree are of two sorts; those of St. Domingo are delicate, adhering to the stumps of the trees that dip in the water. The negro divers cut them off with a bill, and they are served upon table with the roots. Britain has been noted for oysters from the time of Juvenal. The luxurious Romans were very fond of this fish, and had their layers or stewers for oysters as we have at present. Sergius Orata was the first inventor of these, as early as the time of L. Crassus the orator. He did not make them for the sake of indulging his appetite, but through avarice, and made great profits from them. Orata got great credit for his Lucrine oysters; for, says Pliny, the British were not then known. The ancients eat them raw, having them carried up unopened, and generally eating them at the beginning of the entertainment, but sometimes roasted. They had also a custom of stewing them with mallows and ducks, or with fish. Britain still preserves its superiority in oysters

eyes other countries. Most of our coasts produce them naturally; and in such places they are taken by dredging, and are become an article of commerce, both raw and pickled. The very shells, calcined, become a useful medicine as an absorbent. In common with other shells, they prove an excellent manure. Stews or layers of oysters are formed in places which nature never allotted as habitations for them. Those near Colchester have been long famous; at present there are others that at least rival the former, near the mouth of the Thames. The oysters, or their spats, are brought to convenient places, where they improve in taste and size. It is an error to suppose that the fine green, observed in oysters taken from artificial beds, is owing to copperas; it being notorious how destructive the substance or the solution of it is to all fish.

In May the oysters cast their spawn, which the dredgers call their spats; and in the same month the dredgers (by the law of the admiralty court) have liberty to catch all oysters of what size soever. When they have taken them, with a knife they gently raise the small brood from the clutch, and then they throw the clutch in again, to preserve the ground for the future, unless they be so newly spat that they cannot be safely severed from the clutch; in that case they are permitted to take the stone or shell, &c., that the spat is upon, one shell having many times twenty spats. After May, it is felony to carry away the clutch, and punishable to take any other oysters, unless it be those of size; that is to say, about the bigness of a half-crown piece, or when, the two shells being shut, a fair shilling will rattle between them. The places where these oysters are chiefly caught are called the Pent-Burnham, Malden, and Colne waters; the latter taking its name from the Colne, which passes by Colchester and gives name to that town. See COLNE. This brood and other oysters they carry to the creeks of the sea, at Brickelsea, Mersy, Langno, Fingrego, Wivenho, Tolesbury, and Saltcoast, and there throw them into the channel, which they call their beds, or layers, where they grow and fatten; and in two or three years the smallest brood will be oysters of the size aforesaid. Those oysters which they would have green, they put into pits about three feet deep in the salt-marshes, which are overflowed only at spring tides, to which they have sluices, and let out the salt water until it is about a foot and a-half deep. These pits, from some quality in the soil co-operating with the heat of the sun, will become green, and communicate their color to the oysters that are put into them four or five days, though they commonly let them continue there six weeks or two months, in which time they will be of a dark green. The oysters, when the tide comes in, lie with their hollow shell downwards; and, when it goes out, they turn on the other side: they remove not from their place, unless in cold weather, to cover themselves in the ouse. The oysters are sick after they have spat; but in June and July they begin to mend, and in August they are perfectly well.

OSTRICH, *n. s.* Fr. *autruche*, probably from

the Arab *shostrar*; Ital. *strazzo*. A species of *struthio* or cassowary. See STRUTHIO.

Gavest thou the goodly wings unto the peacock? or wings and feathers unto the *ostrich*? *Job xxxix.*

I'll make thee eat iron like an *ostrich*, and swallow my sword like a great pin, ere thou and I part.

Shakespeare.

The Scots knights errant fight, and fight to eat, Their *ostrich* stomachs make their swords their meat.

Cleveland.

Modern *ostriches* are dwindled to mere larks, in comparison with those of the ancients. *Arbuthnot.*

The *ostrich* swallows bits of iron or brass, in the same manner as other birds will swallow small stones or gravel, to assist in digesting or comminuting their food. It lays its eggs upon the ground, hides them under the sand, and the sun hatches them.

Calmet.

OSTRICH. See STRUTHIO.

OSTROGOSH, a large town of European Russia, in the government of Voronez. Of its 11,000 inhabitants, a part are Cossacs, and it contains ten churches, and a number of shops built of brick. At the annual fairs horses and oxen are brought from different parts.

OSWALD (St.), the first Christian king of Northumberland, during the heptarchy. He totally defeated Cadwell, the British monarch, at the village named from him St. Oswald; but was afterwards defeated and killed by Penda, king of Mercia, at Oswestry, on the 5th of August 642. The Pagan barbarian, Penda, cut his body in pieces, and exposed them on stakes, in the field, as trophies of his victory. The priests, therefore, ranked him as a saint and martyr, and pretended to confirm his saintship by miracles.

OSWEGO, a river of New York, which runs from Oneida Lake into Lake Ontario. After a very crooked course of eighteen miles, it meets Seneca River at Three River Point, whence to its mouth it is twenty-four miles. The principal fall is at Volney, twelve miles from Oswego. This is a rapid river, and its navigation is improved by locks and canals.

OSWEGO, a county of New York, bounded north-west by Lake Ontario, north by Jefferson county, east by Lewis and Oneida counties, south by Oneida Lake, Onondaga and Cayuga counties, and west by Cayuga.

OSWESTRY, an ancient market-town of England, in Shropshire; 174 miles from London; with a castle. It was anciently a borough, and is celebrated in Saxon history for the defeat and death of king Oswald. From its situation it was much harassed during the conquest of Wales by Edward I.; and, during the barons wars, king John set fire to the town; it was soon afterwards rebuilt, and again destroyed by Llewellyn, in the year 1233. The town-gates were fixed at the four cardinal points, which are all down, and but few vestiges of the walls are now to be seen. The ancient name of Oswaldstre, Oswald's cross, is supposed to have been derived from Oswald, king of Northumberland, who was killed here in a battle with Penda, king of Mercia, before which time it was called Masefield. The town, in consequence of an act obtained in 1810, has been very considerably improved, and it is now well-paved and lighted. Its church was

formerly a monastery called *Blancminster*. It is spacious, and has a handsome plain tower. In 1542 and 1567 this town suffered much by fire. It is governed by two bailiffs, burgesses, &c., and once carried on considerable trade in Welsh cottons and flannels, which is now much decayed. But, besides a good grammar school, it has an excellent charity school for forty boys, besides girls. There are only two fragments of the castle remaining. It stood on an artificial mount, surrounded by a fosse, extending to the Willow-gate. It is 180 miles north-west of London, and eighteen north of Shrewsbury.

OSYMANDES, or **OSYMANDYAS**, a famous king of Egypt, who, according to some authors, was the first monarch who collected a great number of books for the purpose of forming a library. To this curious collection he gave the curious title of *Pharmacy of the Soul*. 'He appears to have been a prince of great elegance and taste.' *Diodorus Siculus* describes many sumptuous edifices erected by him; among these his palace or mausoleum has been eminently distinguished for the paintings and sculptures with which it was adorned.

OTACOUS TIC, *n. s.* *Gr. ωτα and ακουω*; *Fr. otacoustique*. An instrument to facilitate hearing.

In a hare, which is very quick of hearing, it is supplied with a bony tube; which, as a natural *otacoustick*, is so directed backward as to receive the smallest and most distant sound that comes behind her.

Grew's Cosmologia.

OTAHETEE, or **KING GEORGE THE THIRD'S ISLAND**, an island of the South Sea, discovered by captain Wallis in 1767; visited in 1768 by M. Bougainville; and by captain Cook in 1773 and 1774, who had in 1769 sailed round the island in a boat to observe the transit of Venus. Long. from 149° 13' to 150° 0' W., lat. from 17° 30' to 17° 48' N. The island consists of two distinct parts united by a narrow neck of land; the larger being called by the natives *Tiarrabou*, or *O-Taheitee-Neu*; the smaller one *Opouronou*, or *O-Taheitee-Ete*. The circumference of the whole island is about forty leagues.

The country has a delightfully romantic appearance, rising from the sea like an amphitheatre, and being covered with fruit trees of various kinds, particularly the cocoa-nut. About three miles from the shore the country ascends into lofty hills, terminated in peaks, covered with wood to the summits, from which large rivers are precipitated into the sea. The climate is extremely healthy and pleasant; there is generally a little breeze of wind from east to S. S. E., and the tide rises very little, being governed by the winds. In the published account of the first missionary voyage, it is mentioned that from March till August the thermometer never fell below 65°, and seldom rose above 73°. During the other half of the year the weather is, however, hotter. From December to March the weather is often rainy and tempestuous. The wind blows hard from the west, with rain, and a heavy swell breaks on the shore. During the remainder of the year the easterly wind prevails, with an alternate land and sea breeze.

The islanders, who inhabit huts exposed to all

the winds, and hardly cover the earth, which serves them for a bed, with a layer of leaves, are remarkably healthy and vigorous, and live to old age without enduring any of its infirmities; their senses are acute, and they retain their beautiful teeth to the last. They are subject, however, to several sorts of leprous complaints; some were seen by captain Cook that had ulcers upon various parts of their bodies: yet they seemed little regarded by those who were afflicted with them, and no application whatever was used to them. They are sometimes also afflicted with choleric, and coughs are frequent; the chiefs are sometimes attacked with a disorder similar to the gout, in which the legs are swelled and excessively painful. M. de Bougainville's surgeon had seen many with marks of the small pox. The usual method employed here to restore the sick to health is by incantations, after which the exorcist applies the leaves of the cocoa tree plaited to the fingers and toes.

The soil is a rich fat earth, of a blackish color. It produces spontaneously, or with very slight culture, a great variety of the most excellent fruits; such as the bread-fruit, cocoa-nuts, bananas, plantains, potatoes, yams, sugar-canes, ginger, turmeric; a fruit that grows in a pod like a large kidney-bean; a tree called *wharra*, which produces fruit something like the pine-apple; a species of fern; and the Chinese paper mulberry, of the bark of which they make their cloth; the *ava-ava*, the *barringtonia*, with many other rare plants.

When the trade wind gets far south, and blows fresh, it generally rains on the south side of the island, bringing the clouds from the mountains of *Tiarrabou*. This occasions a great difference in the bread-fruit season between the north and south sides of the island. The great bread-fruit harvest commences on the northern side about November, and continues till the end of January; whilst, on the south side, in some parts, it begins in January, and continues in different districts till November. But though this is the case with the general harvest, on both sides of the island, there are some kinds of bread-fruit, though scarce, in season all the year in the district of *Attahooroo*. The different species of the same tree amount to thirty.

On the hills the soil changes from the rich loam into various veins of red, white, dark, yellow, or bluish earth, clay, or marl: in the red are found stones resembling cornelian or flint; but being full of veins, though they will strike fire with steel, they break on a second stroke. The white appears a pipe-clay, or fuller's earth; the dark a fine fat mould, probably the decayed parts of vegetable substances; the yellow is mixed with gravel; the blue a marly substance. These are all found in digging ten or twelve feet, and the under stratum appears a soft sandstone of a brownish color, intermixed with hard rock. The hills also afford a blackish stone, a kind of lava, in pieces of eight or ten feet long, and from four to ten inches thick, of which they formerly made their stone tools: it is of a fine grain, though not very hard, nor apt to splinter; which answered best the purposes of the natives, as they could thus bring them more easily to an

edge; but at every stroke almost their adzes required whetting, and two-thirds of their time nearly was employed in this labor. The beds of the rivers consist of stones and gravel; many of which contain a glassy substance, and will melt in a strong fire; others are more infusible, and many are found like pumice stone. In powder the magnet attracts many particles. In the district of Matavia is a cliff called Peeha, which one of the missionaries describes as formed of an immense number of oblong pieces of stone, strongly cemented together, and hanging in a very romantic manner. It is about eighty or ninety feet high, and twice as broad; at the bottom runs the largest river in the island. This is probably basaltic. The mountains are in some parts bare and full of precipices, broken as by earthquakes. In the bosom of those which bound the district of Vyeorede there is a large freshwater lake called Vyeheerea, which the natives say cannot be sounded with any line, and contains very large eels. On the banks many inhabitants are seated, who have plenty of all sorts of provisions, except the bread-fruit, for which they substitute the mountain plantain. This lake empties itself into the valley of Vyeorede.

The bay of Matavai has safe anchorage during eight months of the year, but is dangerous from December to March. The weather is in general temperate; captain Cook, and all the other navigators by whom this island have been since visited, concur in stating that they were not incommoded by the heat.

The food of the common people entirely consists of the bread-fruit, bananas, plantains, yams, apples, and a sour fruit, which, though not pleasant by itself, gives an agreeable relish to roasted bread-fruit, with which it is frequently beaten up. The flesh, which is reserved for the tables of the great, is that of poultry, hogs, or dogs: the flesh of their fowls is not well tasted, but that of dogs is esteemed by the natives beyond pork. The dogs are fed on vegetables, and never allowed to taste animal food. The smaller fish are generally eaten raw, as we eat oysters: every thing that can be procured from the sea is made an article of their food. To dress their food they kindle a fire, by rubbing the end of one piece of dry wood upon the side of another. They then dig a pit about half a foot deep, and two or three yards in circumference; they pave the bottom with large stones, which they lay down very smooth and even, and then kindle a fire in it with dry wood, leaves, and the husks of cocoa-nuts. When the stones are sufficiently heated, they take out the embers, and rake up the ashes on every side; they then cover the stones with a layer of green cocoa-nut leaves, and wrap up the animal that is to be dressed in the leaves of the plantain. When it is placed in the pit, they cover it with the hot embers, and lay upon them bread-fruit and yams, which are also wrapt up in the leaves of plantain. They were quite unacquainted, when first visited, with the method of boiling water, and had no vessels among them that would bear the fire. Their general drink was water, or the milk of the cocoa-nut. They showed in general an aversion to strong liquors; and, when one of them happen-

ed to drink so freely with any of the ship's company as to be intoxicated, he resolutely refused to taste any thing that was likely to produce the same effect again; but they have a plant called ava-ava, from the root of which they procure a liquor which has an inebriating quality. The quantity of food which they eat at a meal is prodigious. Captain Cook says, he has seen one man devour two or three fishes as big as a perch; three bread-fruits, each bigger than two fists; fourteen or fifteen plantains, or bananas, each six or seven inches long and four or five round; and nearly a quart of the pounded bread-fruit. Men of rank are constantly fed by their women. They have also a kind of fermented paste called mahie. The men and women never eat together.

The government is monarchical and hereditary. There is also an aristocracy, consisting of the chiefs of the several districts, some of whom are supreme in one district, and exercise in their own territories all regal power, yet still subject to the monarch as their sovereign paramount. There is a third rank next to these, namely, rattira, or gentlemen; and another class of them who cultivate the land, and a fifth class of servants. In the scale of rank birth enjoys singular distinction. A chief is always a chief; and though expelled from his command, losing his district, or having his honors transferred to his child, he continues noble; on the other hand no acquisition can raise a common man to a higher station than that of towha, or rattira: yet the meanest are in no slavish dependence. The honor and respect which they pay their chief is rather through force of custom than the fear of punishment. They are admitted as their companions on all occasions, and treated with perfect freedom; indeed in outward appearance they can hardly be distinguished. The king is not averse to converse with the lowest of his subjects, or to be their visitor; and never treats them with hauteur. His retinue is often changing: no man serves him longer than he pleases. They have no wages, nor engage for any stated time, though some remain in the same family all their lives; and these ancient domestics are as much respected as their own relations.

They have no writing or records respecting property, but memory and landmarks. Every man knows his own; and he would be thought of all characters the basest who should attempt to infringe on his neighbour, or claim a foot of land that did not belong to him or his adopted friend; for the tayo may use it during his friend's lifetime, and, if he has no child, possess it at his death. If a man bequeaths his property to another on his death-bed, no person disputes the bequest, as there are always witnesses abundant to the gift, if the heir is not present. The landmarks set by their ancestors the father points out to the son or heir; should any dispute arise, multitudes know where the mark stood, and the matter is in general easily settled. Indeed it is much the same in all litigations; the case is referred to a by-stander, and the party which he declares in the wrong submits, and makes the other a peace-offering of the plantain-stalk. If any matter of serious offence is given, the whole family or district take it up, and go to

war with their adversaries ; but, if they choose not to fight, a peace-offering must be made, which is never refused : if they will fight the weakest must suffer ; and, as all the relations adopt the quarrel, there is sometimes much bloodshed.

The chief use which they make of their houses is to sleep in ; for, unless it rains, they generally eat in the open air. These houses are sheds, not quite four feet from the ground, raised on three rows of pillars, and erected on an oblong square ; their width is nearly half their length. They are all built in the woods between the sea and the mountains. The roof resembles our thatched houses in England, and consists of two flat sides inclining to each other, covered with palm-leaves. The floor is covered with hay, over which they spread mats. Some of these huts are furnished with a stool, and a few blocks of wood, which being square, one side is hollowed into a curve ; and these they use as pillows. In these open dwellings the whole family repose at night. Their day-clothes are their only night covering.

The stature of the men, in general, is from five feet seven to five feet ten inches : the tallest men seen by captain Wallis measured six feet three inches and a half ; and captain Cook, in his second voyage, describes O-Too, the king of Otaheitee, to be of that height. They are of a pale brown complexion ; their hair in general is black, and finely frizzled ; they have black eyes, flat noses, large mouths, and white teeth ; the men wearing their beards in many fashions, but all of them pluck out a great part. The women, in general, are much smaller, especially those of the lower ranks, which is attributed to their early and promiscuous intercourse with the men ; the better sort are above the middle stature of Europeans. Their skin is most delicately smooth and soft ; they have no color in their cheeks ; their nose is generally somewhat flat, but their eyes are full of expression, and their teeth beautifully even and white. 'The women,' says M. de Bougainville, 'have features not less agreeable than the generality of Europeans, and a symmetry of body and beautiful proportion of limbs, which might vie with any of them. Some have their hair brown, red, or flaxen, in which they are exceptions to all the natives of Asia, Africa, and America, who have their hair black universally ; here, in the children of both sexes, it is generally flaxen. The strongest expression is painted in the countenances of these people ; their walk is graceful, and all their motions are performed with great vigor and ease.' When Vancouver visited the island, he did not find that the personal attractions of the women corresponded to the accounts of former navigators. According to the account of the natives, they had fallen off in their looks, which they attributed to their indiscriminate commerce with the Europeans, and to the loathsome diseases they had received from their visitors.

The language of these islanders is soft and melodious, abounding with vowels ; it was found very difficult to teach the natives to pronounce a single English word ; but Spanish and Italian words ending in a vowel they pronounce with the greatest ease. They called captain Cooke

Toote, Mr. Hicks, the first lieutenant, Hote, &c., and gave their own names to almost every man in the ship.

The Otaheiteans are industrious, and friendly in their dispositions ; but, like all other nations not fully civilised, their passions are violent, and they are very fickle. Bougainville says, 'even in Europe itself one cannot see more expert filchers than the people of that country.' They are lascivious almost beyond credibility. A number of the principal people are said to have formed themselves into a society, in which every woman is common to every man. This society is named Arreoy. If any of the female members prove with child, unless she can procure some man to adopt the child as his own, not all the strong affections of a mother can save the life of the pre-condemned innocent ; but the child as soon as born is smothered, and the mother is left at liberty to renew her former course of execrable prostitution. Should any man co-operate with a woman in saving the life of a child, they are both excluded for ever from the arreoy, and are considered as man and wife. Both men and women wash their whole bodies three times a day in running water, and are remarkably cleanly. They are most expert swimmers, being accustomed to the water from their infancy. 'Their countenances,' says captain Cook, 'very remarkably express the abundant good nature which they possess, and are entirely free from that savage keenness which marks nations in a barbarous state. Their peaceable disposition is evinced from the friendly reception all strangers have met with who have visited them. Instead of offering to attack them openly or clandestinely, as has been the case with most of the inhabitants of these seas, they have never appeared in the smallest degree hostile, but, on the contrary, like the most civilised people, have courted an intercourse with their visitors by bartering, which is the only medium that unites all nations in a sort of friendship.'

The principal manufacture among the Otaheitan is cloth, made of the bark of trees, which are of three kinds, viz. the Chinese mulberry-tree, or aouta ; the bread-fruit tree, or ooro ; and one that is described by Dr. Hawesworth as resembling the wild fig-tree of the West Indies. (Of all these the paper mulberry affords the best cloth ; being both finer, softer, whiter, and better suited to take a color ; the ooro produces cloth much inferior in contexture ; and the last is very coarse, in color resembling the darkest brown paper ; but this last is the only kind that withstands water. They likewise prepare a red dye ; made by mixing the yellow juice of a small species of fig, which the natives call matee, with the greenish juice of a sort of fern or bindweed, or of several other plants, which produce a bright crimson : and this the women rub with their hands, if the piece is to be uniformly of a color ; or they make use of a bamboo reed, if the piece is to be marked or sprinkled into different patterns : they also make finer mats than any in Europe. Rushes, grass, the bark of trees, and the leaves of a plant called wharrow, are their materials, and the matting is applied to various uses. The coarser kind is employed for sleep-

ing or sitting on; the finer sort its used for garments. They are dexterous too in making basket and wicker-work. Ropes and lines are made of the bark of a tree; and the fibres of the cocoa-nut furnish them with thread, with which they fasten the different parts of their canoes, &c. The bark of a nettle which grows in the mountains, called *orawa*, supplies them with excellent fishing-lines; their hooks are made of mother-of-pearl, to which they fix a tuft of hair, made to resemble the tail of a fish. The point is turned inwards. They make also a kind of seine of a coarse broad grass, the blades of which are like flags. These they twist and tie together in a loose manner, till the net, which is about as wide as a large sack, is from sixty to eighty fathoms long. This they haul in smooth shoal-water; and its own weight keeps it so close to the ground that scarcely a single fish can escape. Their cane harpoons, pointed with hard wood, are very effectual weapons. Tools used by the Otaheiteans are, an adze made of a kind of basaltes, of a gray or blackish color, not very hard, but of considerable toughness; a chisel or gouge of bone, generally the bone of a man's arm between the wrist and elbow; a rasp of coral, and the skin of a sting-ray; also coral and sand, as a file or polisher. With such tools they generally take up several days in felling a tree; but after it is down, and split into planks, they smooth them very expeditiously with their adzes, and can take off a thin coat from a whole plank without missing a stroke.

The men of consequence wear the nails of their fingers long, as a badge of distinction. The women always cut their hair short round their heads. Both sexes tattoo the hinder part of their thighs and loins with black lines in various forms; these marks are made by striking the teeth of an instrument somewhat like a comb just through the skin, and rubbing into the punctures a kind of paste made of soot and oil, which leaves an indelible stain. Both sexes are gracefully clothed. Their dress consists of two pieces of this cloth; one of them, having a hole in the middle to put the head through, hangs from the shoulders to the mid-leg before and behind; another piece between four and five yards long, and about one broad, they wrap round the body; this cloth is made like paper, of the macerated fibres of the inner bark spread out and beaten together. Their ornaments are feathers, flowers, pieces of shell, and pearls; the pearls are worn chiefly by the women. In wet weather they wear matting. They have a custom also of anointing their heads with what they call *monoe*, an oil expressed from the cocoa-nut, in which some sweet herbs or flowers have been infused: as the oil is generally rancid, the smell is at first very disagreeable to a European; and as they live in a hot country, and never use a comb, they are not able to keep their heads free from lice, which the children and common people pick out and eat; a custom wholly different from their manners in every other particular, for they are delicate and cleanly, almost without example; and those to whom captain Cook distributed combs, soon delivered themselves from vermin. Later voyagers, however,

give the same account of their filthiness in this respect as Cook. Since captain Cook was here the number of the inhabitants on the island is much decreased; it is not now supposed to contain above 5000 souls.

The priesthood seems to be hereditary in one family or tribe; and is said to be numerous. These priests are professedly the men of science and medicine. They teach that the Supreme Deity, besides many female descendants, has one son named Tane, and to him they direct their worship, though they do not believe that the good or bad conduct of mankind on earth makes them more or less acceptable to him. They believe the existence of the soul after death, and of a greater or less degree of happiness to be then enjoyed; but they seem to have no conception of a state of punishment hereafter. The share of happiness they imagine every individual will enjoy in this future state will be assigned to him according to the rank he holds on earth. Much parade is used in their attempts to recover the sick, though their remedies consist only of ridiculous ceremonies and enchantments. The marriages are secular contracts; but no one has a right to perform tattooing except the priests; and, this being a custom universally adopted, it may be supposed that the performing it is a lucrative employment. The males in general undergo a kind of circumcision which is likewise the exclusive privilege of the priests to perform. But what most establishes the credit of this order of men is their skill in astronomy and navigation.

Captain Cook saw a wicker representation of *Mauwe*, one of their *Eatuas*, or gods of the second class, which was said to be the only one of the kind in Otaheite. It was seven feet high. These people pray at sun-rise and sun-set. Our navigator, who had some reason to believe that, among the religious customs of this people, human sacrifices were sometimes offered up to their deities, went to a *morai*, or place of worship, accompanied by captain Furneaux, having with them a sailor who spoke the language tolerably well, and several of the natives. In the *morai* was a *tupapow*, a kind of bier, with a shed erected over it, on which lay a corpse and some provisions. Captain Cook asked if the plantain were for the *Eatua*? If they sacrificed to the *Eatua* hogs, dogs, fowls, &c.? To which an intelligent native answered in the affirmative. He then asked if they sacrificed men to the *Eatua*? He was answered, 'bad men they did; first beating them till they were dead.' He then asked if good men were put to death in this manner? His answer was No. He gathered that men for certain crimes were condemned to be sacrificed to the gods, provided they did not possess any property, which they might give for their redemption. It seems to rest with the high-priest to single out the victims for sacrifice.

The dead bodies are placed in the open air till the bones become quite dry: a shed was erected on one occasion close by the house where the deceased had resided; it was about fifteen feet long, and eleven broad; one end was left quite open; the other end and the two sides were partly enclosed with a sort of wicker-work. The

bier was a frame of wood, like that on which the sea beds, called cots, are placed, with a matted bottom, and supported by four posts, at the height of about four feet from the ground. The body was covered first with a mat, and then with white cloth; by the side of it lay a wooden mace, one of their weapons of war; and near the head of it, which lay next to the close end of the shed, lay two cocoa-nut shells; at the other end a bunch of green leaves, and some dried twigs, all tied together, were stuck in the ground, by which lay a stone about as big as a cocoa-nut. Near these lay one of the young plantain-leaves that are used for emblems of peace, and close by it a stone axe. At the open end of the shed also hung, in several strings, a great number of palm-nuts; and without the shed was stuck up in the ground a stem of a plantain-tree, about six feet high, upon the top of which was placed a cocoa-nut shell full of fresh water; against the side of one of the posts hung a small bag, containing a few pieces of bread-fruit ready roasted. The food so placed by the corpse seemed designed as an offering to their gods. They cast in, near the body, small pieces of cloth, on which the tears and blood of the mourners have been shed; for in their paroxysms of grief it is a universal custom to wound themselves. The mourner is always a man; and he is dressed in a very singular habit. When the bones are stripped of their flesh, and become dry, they are buried.

The mourning which is worn here is a head-dress of feathers, the color of which is consecrated to death, and a veil over the face. The whole nation is said to appear thus on the death of their king. The mourning for fathers is very long. The women mourn for their husbands, but not the husbands for their wives.

Their boats or canoes are of different sorts. Some are made out of a single tree, and hold from two to six men. These are principally employed in fishing; others are constructed of planks very dexterously sewed together; they will sometimes hold from ten to forty men; they generally lash two of these together, and set up two masts between them; or, if they are single, they have only one in the middle; and in these vessels they will sail far beyond the sight of land. A third sort seems to be principally designed for pleasure. These are very large, but have no sail; and in shape resemble the gondolas of Venice. The plank of which these vessels are constructed is made by splitting a tree, with the grain, into as many thin pieces as possible. The boards are brought to the thickness of about an inch, and are afterwards fitted to the boat with great exactness. To fasten these planks together, holes are bored with a piece of bone, fixed into a stick for that purpose. Through these a kind of plaited cordage is passed, so as to hold the planks strongly together. The seams are caulked with dry rushes; and the whole outside of the vessel is painted over with a kind of gummy juice, which supplies the place of pitch. Their weapons are slings, which they use with great dexterity; pikes headed with the skins of sting-rays, and clubs of about six or seven feet

long, made of a very hard wood. Thus armed, they fight with great obstinacy, and give no quarter to man, woman, or child, who happens to fall into their hands during the battle, nor for some time afterwards, till their passion subsides. They have likewise bows and arrows; but the latter are headed only with stone, and none of them pointed. They have targets of a semicircular form, made of wicker-work, and plaited strings of the cocoa-nut; fibres, covered with glossy bluish green feathers belonging to a kind of pigeon, and ornamented with sharks' teeth, arranged in three concentric circles.

European visits led to the attempt to establish missionaries on this island; but, after various efforts to introduce Christianity and the arts of civilised life, those worthy laborers were compelled to retreat.

OTAKOOTAI, or Wenooaette, an island in the South Pacific Ocean, about three miles in circumference, discovered by Cook in the year 1777. The beach within the reef is composed of a white coral sand, and the land within does not rise above six or seven feet: it is entirely destitute of water. The only common trees found there were cocoa-palms, of which there were several clusters; and vast numbers of the wharra. The only bird seen was a beautiful cuckoo, of a chestnut brown, variegated with black. But upon the shore were some egg-birds, a smaller sort of curlew, blue and white herons, and great numbers of noddies. Though there were at this time no fixed inhabitants, indubitable marks remained of its being, at least occasionally, frequented. Long. 201° 37' E., lat. 19° 51' S.

OTFORD, a town of England, in Kent, celebrated for a battle between the two Saxon kings, Offa of Mercia, and Alrick of Kent, who was killed by Offa; and another in 1016, wherein the Danish king Canute was routed by king Edmund Ironside. Offa, to atone for the blood he had shed in that battle, gave this place to Christchurch, Canterbury (as the deed says), in pascua porcorum, 'for feeding the archbishop's hogs;' and so it remained in the archbishop's liberty, till exchanged with king Henry VIII. for other lands. There was a chantry founded at the Ryehouse in this parish.

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| OTH'ER, <i>adj., pron., & n. s.</i> | } Sax. <i>oþen</i> a þen; Goth. <i>audr odr</i> ; Teut. <i>odir</i> ; French <i>autre</i> . Differ- |
| OTH'ER-GATES, <i>adv.</i> | |
| OTH'ER-WHERE, | |
| OTH'ER-WHILE, | |
| OTH'ERWISE. | |

ent; not this; not the same; not I or he; something beside; correlative to each; the remaining one of two; the next; the third part; other gates (from other and gates, meaning way) is in another manner: otherwise, in other places: otherwise, in a different manner; or in different respects; by or from other causes.

In lowliness of mind let each esteem *other* better than themselves. *Philip. ii. 3.*

Of good actions some are better than *other* some. *Hooker.*

They only plead that whatsoever God revealeth, as necessary for all Christian men to do and believe, the same we ought to embrace, whether we have received it by writing or *otherwise*, which no man denieth. *Id*

As Jews they had access to the temple and synagogues, but as Christians they were of necessity forced *otherwise* to assemble themselves. *Id.*

The dismayed matrons and maidens, some in their houses, *other* some in the churches, with floods of tears and lamentable cries, poured forth their prayers to the Almighty, craving his help in that their hard distress. *Knolles.*

Were I king,
I should cut off the nobles for their lands;
Desire his jewels and this *other's* house.

Shakespeare.

Will it not be received

That they have don't?

—Who dares receive it *other*!

Id.

If Sir Toby had not been in drink, he would have tickled you *othergates* than he did. *Id.*

Sir John Norris failed in the attempts of Lisbora, and returned with the loss, by sickness and *otherwise*, of eight thousand men. *Raleigh.*

Physicians are some of them so conformable to the humour of the patient, as they press not the cure of the disease; and some *other* are so regular in proceeding according to art, as they respect not the condition of the patient. *Bacon.*

Bind my hair up: as 'twas yesterday?

No, nor the *other* day.

Ben Jonson.

The king had all he craved, or could compel,
And all was done—let *others* judge how well.

Daniel.

His godlike acts, and his temptations fierce,
And former sufferings *otherwise* are found.

Milton.

The evidences for such things are not so infallible, but that there is a possibility that the things may be *otherwise*. *Wilkins.*

I can expect no *other* from those that judge by single sights and rash measures, than to be thought fond or insolent. *Glanville.*

Scotland and thou did each in *other* live,
Nor would'st thou her, nor could thee she survive.

Dryden.

He that will not give just occasion to think that all government in the world is the product only of force and violence, and that men live together by no *other* rules but that of beasts, where the strongest carries; and so lay a foundation for perpetual disorder and mischief, tumult, sedition, and rebellion; things that the followers of that hypothesis so loudly cry out against, must of necessity find out another state of government. *Locke.*

There is that controlling worth in goodness, that the will cannot but like and desire it; and, on the *other* side, that odious deformity in vice, that it never offers itself to the affections of mankind but under the disguise of the *other*. *South.*

In these good things, what all *others* should practise, we should scarce know to practise *otherwise*. *Sprat.*

Thy father was a worthy prince,
And merited, alas! a better fate;
But heaven thought *otherwise*.

Addison's Cato.

Never allow yourselves to be idle, whilst *others* are in want of any thing that your hands can make for them. *Low.*

Men seldom consider God any *otherwise* than in relation to themselves, and therefore want some extraordinary benefits to excite their attention, and engage their love. *Rogers.*

No leases shall ever be made *other* than leases for years not exceeding thirty-one, in possession, and not in reversion or remainder. *Swift.*

I have long discontinued this practice, and many *others* which I found necessary to adopt, that I might

escape the worst of all evils, both in itself and in its consequences—an idle life. *Couper.*

Sure never were seen two such sweet little ponies; *Other* horses are clowns, and these macaronies; And to give them this title I'm sure is 'not wrong, Their legs are so slim and their tails are so long.

Sheridan.

And the pale smile of beauties in the grave,
The charms of *other* days, in starlight gleams
Glimmer on high; their buried locks still wave
Along the canvas. *Byron.*

OTHNIEL, the celebrated judge of Israel, was the son of Kenaz, of the tribe of Judah. We are told (Joshua xv. 17 and Judges i. 13) that he was Caleb's younger brother. But, if Caleb and Othniel had been brothers, the latter could not have married his niece Achsah the daughter of Caleb. The Scripture mentions Kenaz as father to Othniel, and Jephunneh as the father of Caleb. It is therefore supposed that Kenaz and Jephunneh were brothers, and that Othniel and Caleb were cousin-germans, and in this sense to be brothers according to the language of Scripture. Thus, Achsah being but second-cousin in respect of Othniel, he might marry her consistently with the letter of the law. The heroism by which he obtained Achsah is recorded in Joshua xv. 16, 17: and the still greater heroism by which he delivered his country from the oppressions of Chushanrishathaim, A. M. 2599, is recorded in Judges iii. 9—11. Whether he judged Israel during the forty years of peace that followed is uncertain.

OTHO, a tribune of the people, who, in Cicero's consulship, introduced a regulation to permit the Roman knights at public spectacles to have the fourteen first rows after the seats of the senators. This was opposed with virulence by some, but Cicero ably defended it.

OTHO (M. Salvius), the eighth emperor of Rome, born A. D. 32, of a family descended from the ancient kings of Etruria. He was among the number of Nero's favorites, was raised to the highest offices of the state, and made governor of Pannonia by the interest of Seneca, who wished to remove him from Rome, lest Nero's love for Poppæa should prove his ruin. After Nero's death, Otho conciliated the favor of Galba the new emperor; but, when Galba refused to adopt him as his successor, he procured his assassination, and proclaimed himself emperor. He was acknowledged by the senate, but the sudden revolt of Vitellius in Germany rendered his situation very precarious. Otho obtained three victories; but in a general engagement near Brixellum his forces were defeated, and he stabbed himself when all hopes of success had vanished, in the thirty-seventh year of his age, after a reign of about three months. The last moments of Otho's life were those of a philosopher. He comforted his soldiers who lamented his fortune, and, expressing his concern for their safety, observed, that it was better that one man should die than that all should be involved in ruin on account of his obstinacy. His nephew was much affected, and feared the anger of the conqueror; but Otho observed, that Vitellius would be kind to the relations of Otho, since, in the time of their greatest enmity, the mother of Vitellius had received every friendly

treatment from his hands. He also burnt the letters which, by falling into the hands of Vitellius, might provoke his resentment against those who had favored the cause of an unfortunate general. His father was a favorite of Claudius.

OTHONNA, in botany, African ragwort, a genus of the polygamia necessaria order, syngenesia class of plants; natural order forty-ninth, composite: receptacle naked; there is almost no pappus: *cal.* monophyllous, multifid, and nearly cylindrical. Species one, a native of the south of Europe.

OTHRYADES, one of the 300 Spartans who fought against 300 Argives, when those two nations disputed their respective right to Thyreata. Two Argives, Alcinoor and Cronius, and Othryades, survived the battle. The Argives went home to carry the news of their victory; but Othryades, who had been reckoned among the number of the slain on account of his wounds, recovered himself, and carried some of the spoils of which he had stripped the Argives into the camp of his countrymen; and after he had raised a trophy, and had written with his own blood the word *vici* on his shield, he killed himself, unwilling to survive the death of his countrymen.

OTHUS and EPHEALTES, in mythology, two giants, sons of Neptune by Iphimedia, the wife of the giant Aloeus; who educated them as his own, whence they were called Aloeides. They grew nine inches every month, and were only nine years old when they made war against the gods; but were slain by Apollo and Diana. They built the town of Asera, at the foot of Mount Helicon.

OTIS, in ornithology, a genus of birds belonging to the order of grallæ. There are several species, principally distinguished by their color. One of these,

O. tarda, the bustard, is the largest of the British land fowls; the male at a medium weighing twenty-five pounds; there are instances of some very old ones weighing twenty-seven: the breadth nine feet; the length nearly four. Besides the size and difference of color, the male is distinguished from the female by a tuft of feathers about five inches long on each side of the lower mandible. Its head and neck are ash-colored: the back is barred transversely with black and bright rust color: the greater quill-feathers are black: the belly white: the tail is marked with broad red and black bars, and consists of twenty feathers: the legs are dusky. The female is about half the size of the male: the crown of the head is of a deep orange, traversed with black lines; the rest of the head is brown. The lower part of the fore side of the neck is ash-colored: in other respects it resembles the male, only the colors of the back and wings are far more dull. These birds inhabit most of the open countries of the south and east parts of England, from Dorsetshire, as far as the Wolds in Yorkshire. They are exceedingly shy, and difficult to be shot; run very fast, and when on the wing can fly, though slowly, many miles without resting. They take flight with difficulty, and are sometimes run down with greyhounds. They keep near their old haunts, seldom wandering above

twenty or thirty miles. Their food is corn and other vegetables, and those large earth worms that appear in great quantities on the Downs before sun-rising in the summer. These are replete with moisture, answer the purpose of liquids, and enable them to live long without drinking on those extensive and dry tracts. Besides this, the males have an admirable magazine for their security against drought, being a pouch, whose entrance lies immediately under the tongue, and which is capable of holding nearly seven quarts; this they fill with water, to supply the hen when sitting, or the young before they can fly. Bustards lay only two eggs, of the size of those of a goose, of a pale olive brown, marked with spots of a dark color; they make no nest, only scrape a hole in the ground. In autumn they are (in Wiltshire generally found in large turnip fields near the Downs, and in flocks of fifty or more.

OTODINI, OTTADINI, or OTTODINI, a nation of ancient Britons, seated on the north-east of the Brigantes, in the countries now called Northumberland, Merse, and the Lothians. As the Otodini are not mentioned by any of the Roman historians, but only by Ptolemy, it is uncertain whether they formed a distinct independent state, or were united with the Brigantes. They were, however, a considerable people, and possessed a long tract of the sea coast, from the Tyne to the Frith of Forth. Their name is derived by Baxter from the old British words *Ot o dineu*, which signify a high and rocky shore; descriptive enough of their country. They were probably reduced by Agricola at the same time with their more powerful neighbours the Brigantes; but, as they lived without the wall of Severus, they were, like the rest of the *Mæatæ*, engaged in frequent revolts. In the most perfect state of the Roman government in this island, the country of the Otodini made a part of the Roman province called Valentia; which comprehended all that large tract between the two walls. As this province was never long together in the peaceable possession of the Romans, they had but few stations in the country of the Otodini, except those on the line of the wall of Severus. Various opinions are entertained among the learned respecting the real situation of the Otodini; and it is even doubtful whether their country was in England or in Scotland. The celebrated Drummond of Hathornden contends for the latter. From Dr. Henry's description, above quoted, it appears to have been in part of both.

OTRANTO, or TERRA D'OTRANTO, a province of Naples, forming the south-east extremity of Italy, having the gulf of Taranto on the west, and the Adriatic on the east. It has a superficial extent of 2600 square miles; and, though mountainous, is very fertile. It suffers, however severely from a want of water. The chief product is olives, whole forests of which grow wild cotton, tobacco, vines, and fruits. On the hills is found noble pasturage; and, on the sea-coast, abundant encouragement to fishing. Otranto is divided into the three districts of Lecce (the capital), Taranto, and Messagna. Population 292,000.

OTRANTO, a fortified town in the Neapolitan province to which it gives name, on the Adriatic.

It is miserably built and decayed; and its inhabitants do not amount to more than 2400. They carry on some trade in olive-oil. In 1810 Fouché, Buonaparte's minister of police, received the title of duke of Otranto. Thirty-three miles east by north of Gallipoli, and eighty east by south of Taranto.

OTRANTO, CAPO DI, a cape of Italy, on the coast of the Adriatic, a few miles south of the town of Otranto.

OTRAR, or Farab, a town of independent Tartary, on the Arsch, formerly a place of considerable extent. It is stated that Timur died at this place; but other accounts represent his death to have taken place at Samarcand. 110 miles north-west of Tocat.

OTTER, *n. s.* Sax. *otter*; Goth. *otr*; Teut. *otter*; Dan. *odder*; Sans. *ood*. An amphibious animal. See below.

The toes of the *otter's* hinder feet, for the better swimming, are joined together with a membrane, as in the bevir; from which he differs principally in his teeth, which are canin; and in his tail which is felin, or a long taper: so that he may not be unfitly called *putoreus aquaticus*, or the water polecat. He makes himself burrows on the water side as a bevir; is sometimes tamed, and taught, by nimbly surrounding the fishes, to drive them into the net.

Grew.

At the lower end of the hall is a large *otter's* skin stuffed with hay.

Addison's Spectator.

Would you preserve a numerous finny race?

Let your fierce dogs the ravenous *otter* chase;

The amphibious monster ranges all the shores,
Darts through the waves, and every haunt explores.

Gay.

OTTER, in zoology. See MUSTELA.

OTTER CREEK, a river of Vermont, United States, which rises near Dorset, and runs west of north, passes by Rutland, Pittsford, Brandon, Middlebury, New Haven, Vergennes, besides other towns, and flows into Lake Champlain, at Basin Harbour, in Ferrisburg. It is navigable for sloops to Vergennes, six miles. Length eighty-five miles.

OTTER CREEK, a river of Kentucky, which runs into the Ohio, long. 86° 24' W., lat. 37° 45' N. Also a river of Vermont.

OTTERBURN, a town of Northumberland, near Ellesdon. It was the field of battle between the English and Scots in 1388, wherein Henry Percy, called Hotspur, was taken prisoner, and Douglas the Scotch general was killed. On this battle was founded the old ballad of Chevy-chase; the village being situated by the river Rhead, on the south side of the Cheviot Hills. The entrenchments are still visible; and a number of tumuli scattered over the adjacent ground mark the slaughter made there. It lies twenty-one miles from Morpeth.

OTTERY, ST. MARY'S, a market town in Devonshire, 159 miles west of London, and ten miles east of Exeter. Its market is on Tuesday, and it has two fairs. The church is very ancient, and resembles a cathedral. A very extensive woollen manufactory was established here by Sir George Yonge and Sir John Duntze, barts. It derived its name from the Otter, and that from the otters formerly found in it. This town was given by king Edward the Confessor to the

church of St. Mary at Rouen in Normandy; but was afterwards bought by Grandison bishop of Exeter, who made of it a quarter college in the reign of Edward III., and therein placed secular priests, with other ministers, to whom he gave the whole manor, parish, tythes, fines, spiritual profits, &c., which amounted to £304 2s. 10d. yearly.

OTTOGANO, or OTTAGANO, a fine old town of Italy, Naples, situated at the eastern base of Mount Vesuvius, about twelve miles east of Naples. The town is understood to owe its name and origin to the ancient Roman villa of Octavianum. It contains three churches, and a castle on the top of an adjacent hill. A large proportion of the inhabitants, about 14,000, support themselves by cultivating gardens.

OTTOMAN PORTE, a title given by Europeans to the grand signior, or the Turkish emperor; from Othoman, the first emperor of the Turks. It is also used metaphorically for the Turkish power, and often simply for the Porte by way of emphasis.

OTWAY (Thomas), an eminent tragic poet, the son of Mr. Humphry Otway, rector of Wolbeding in Sussex; was born at Trotin in that county on the 3d of March 1651. He was educated at Oxford; but went to London, where he became a player, with but indifferent success. However, the sprightliness of his conversation gained him the favor of Charles Fitz-Charles, earl of Plymouth, who procured him a cornet's commission in one of the regiments sent into Flanders; but he returned in very necessitous circumstances, and applied himself to writing for the stage. In comedy he has been deemed too licentious; which, however, was no great objection to his pieces in the profligate days of Charles II. But, in tragedy, few English poets have ever equalled him; and perhaps none ever excelled him in touching the tender passions. There is generally something familiar and domestic in the fable of his tragedies, and there is amazing energy in his expression. But though Otway possessed in so eminent a degree the rare talent of writing to the heart, yet he was not always successful in his dramatic compositions. Dr. Johnson gives this account of his death:—'He died in a manner which I am unwilling to mention. Having been compelled by his necessities to contract debts, and haunted, as is supposed, by terriers of the law, he retired to a public-house on Tower Hill, where he died of want; or, as it is related by one of his biographers, by swallowing, after a long fast, a piece of bread which charity had supplied. He went out, as is reported, almost naked, in the rage of hunger, and finding a gentleman in a neighbouring coffee-house, asked him for a shilling. The gentleman gave him a guinea; and Otway going away bought a roll, and was choked with the first mouthful. All this, I hope, is not true; but that indigence, and its concomitants sorrow and despondency, brought him to the grave, has never been denied.' The doctor adds, that Otway had not much cultivated versification, nor much replenished his mind with general knowledge. His principal power was in moving the passions, to which Dryden in his latter years

left an illustrious testimony. He appears by some of his verses to have been a zealous royalist ; and, as was in those times the common reward of loyalty, he lived and died neglected.'—His dramatic writings are nine in number; the most admired are, *The Orphan*, and *Venice Preserved*. He also made some translations, and wrote several miscellaneous poems. His whole works are printed in two pocket volumes. He wrote four acts of a play, which are lost.

OUACHITTA, or **WACHITTA**, or **WASHTA**, a river of North America, which rises in the Missouri Territory, enters Louisiana, and, pursuing a S. S. E. course, joins Red River, about twenty-three miles from its mouth. About thirty miles by the course of the river above its junction with Red River, it is joined by the Tensaw and Ocatahoola, and after its junction it usually takes the name of Black River.

OUACHITTA (False), is a branch of Red River, which it joins between long. 98° and 99° west.

OVAL, *adj.* & *n. s.* *Fr. oval*; of *Lat. ovum*, an egg. Of an egg shape.

The mouth is low and narrow, but, after having entered pretty far in the grotto, opens itself on both sides in an oval figure of an hundred yards.

Addison.

Mercurius, nearest to the central sun,

Does in an oval orbit circling run ;

But rarely is the object of our sight

In solar glory sunk.

Blackmore.

A triangle is that which hath three angles, or an oval is that which has the shape of an egg.

Watts's Logick.

OVAL is an oblong curvilinear figure, otherwise called ellipsis. See **ELLIPSIS**. However, the proper oval, or egg shape, differs considerably from that of the ellipsis, being an irregular figure, narrower at one end than at another ; whereas the ellipsis, or mathematical oval, is equally broad at each end ; though, it must be owned, these two are commonly confounded together ; even geometers calling the oval a false ellipsis.

OVAQUAPHENOGAW, or **OKEFONOCO**, or **EKANFANOKA**, or **OKERFONOKE**, a marshy lake in the state of Georgia, between the Oakmulgee and Flint Rivers. It is about 280 miles in circumference. In wet seasons it appears like an inland sea with several fertile islands.

OVAR, a brisk trading town of the central part of Portugal, near the coast, stands on a small river which flows through an inland lake, and afterwards into the Vouga. Inhabitants 5000. Twenty-two miles S.S.W. of Oporto.

OVARIUM, in botany, the germen or seed-bud, containing the rudiments of the future seed. See **BOTANY**.

OVARIOUS, *adj.* } *Latin ovum, ovarium.*

O'VARY, *n. s.* } Consisting of eggs : a part of the human matrix.

The **OVATION** generally began at the Albanian mountain, whence the general with his retinue made his entry into the city on foot, with many flutes or pipes sounding in concert as he passed along, and wearing a garland of myrtle as a token of peace. The term ovation, according to Servius, is derived from ovis, a sheep ; because on this occasion the conqueror sacrificed a sheep, as in triumph he sacrificed a bull. The senate,

knights, and principal plebeians, assisted at the procession ; which concluded at the capital, where rams were sacrificed to Jupiter. The first ovation was granted to Publius Posthumus the consul, for his victory over the Sabines, A. U. C. 253.

OUCH, *n. s.* An ornament of gold or jewels. *Ouches* or *spangs*, as they are of no great cost, so they are of most glory.

Beacon.

OUDE, a fertile province of Hindostan, situated between 26° and 28° of N. lat., is bounded on the north by Nepal, on the east by Bahar, on the south by Allahabad, and on the west by Delhy and Agra. It is 250 miles in length, by 100 in breadth. The whole surface is flat, and well watered by large rivers, or their copious tributary streams. The land yields fine crops of wheat, barley, rice, and other grains, cotton, sugar-cane, indigo, and poppies. It is celebrated for its grapes, mangoes, and other fruits. In some of the districts saltpetre and lapis lazuli are found ; and a variety of cotton cloths and a coarse kind of flannel, is made here ; also bows, arrows, shields, matchlocks, and swords. The rains are not so violent, nor of so long a duration here as in Bengal, and the four cold months of the year are delightful.

The Gogra and Goompty rivers are here both navigable by boats at all seasons of the year ; and the Ganges runs along the western boundary of this province. To the north-east are extensive woods and plains covered with grass, which abound in game. The principal towns are Lucknow, Fyzabad, Oude, Khyrabad, Goorackpore, and Bahreich. The inhabitants are about one-third Mahometans, the remainder are Hindoos of a fine handsome race. Great numbers of them enlist in the British service.

Oude, or Ayodhya, was the kingdom of the famous damigod Rama, said to have extended his empire through the whole south of India, and to have conquered the island of Ceylon. It was conquered by the Mahometan kings of Delhy in the thirteenth century, with little opposition, and was long held as a dependent province by one of the chiefs of that court. It was not till the ancestor of the present nabob's family obtained the government, and the invasion of Nadir Shah in 1739, that it became hereditary. Saadit Khan died at this time by poison, taken in consequence of the humiliating treatment he experienced from Nadir Shah ; and his son-in-law, having possession of all his treasure, was confirmed in the government of Oude. Suffier Jung proved an excellent and brave officer, and in 1747 repulsed the Afghans ; in recompense for which service he was honored with the title of Abul Munsur (the victorious), and appointed prime minister. From this period, Abul Munsur Suffier Jung took a leading part in all the measures of the court ; and, in addition to the government of Oude, he obtained that of the province of Allahabad. At length, finding his influence begin to decline, he retired to Oude, where he died in the year 1753. Shujaa ad Dowleh succeeded to his father without opposition, till the year 1764, when he took part with Cossim Aly Khan against the British, and was defeated at the battle of Buxar ; in consequence of which he was compelled to throw

himself on their clemency. He died in 1775, and was tranquilly succeeded by his eldest son, a weak prince, who died in the year 1797. During his government the seat of authority was transferred from Fyzabad to Lucknow, and Benares ceded to the British. He nominated vizier Aly his successor, but, the illegitimacy of this youth having been proved, he was dethroned by the British, and the eldest brother of the deceased nabob, named Saadet Aly, called to the musnud. This was a shrewd prince; but the government of Oude had now been so mismanaged that the British found it requisite to dismember his territory, and, in lieu of a subsidy for the payment of the army, to take from him a number of districts. Saadut Aly died in the year 1814, and left a treasure of several millions, nominating his second son, Mirza Ahmed, his successor; but the British elevated the eldest son Ghazee addeen Hyder to that honor. This prince, in gratitude to the British, immediately offered a present of £1,000,000 sterling in specie to the governor-general. The donation was refused; but, during the Nepaul war, the sum of £2,000,000 was accepted as a loan; and, on the conclusion of the war, a portion of the conquered territories which adjoined Oude were made over to him in discharge of the loan. A battalion of British infantry is also always stationed at Lucknow.

OUDE, or AYODHYA, the capital of the above-mentioned province, long the residence of a Hindoo dynasty, is situated on the south bank of the Dewah or Gogra River, and said once to have been of an incredible extent. In the Ayceen Akberry, which was compiled in the end of the sixteenth century, we are told that it was situated only two miles below the confluence of the rivers Soorjew and Gogra, whereas the present town is at the distance of nearly forty miles. In the vicinity are two remarkably large tombs of great antiquity, which the Mahometans believe are the tombs of Seth and Job. It is related in the history of this place, that the Afghaun emperor Balin, about the year 1280, ordered the governor to be hanged at the city gate for having been defeated by the rebel governor of Bengal. After the battle of Buxar, in 1764, Shugaa Dowleh founded the city of Fyzabad, on the ruins of the ancient capital, at the distance of two miles from the modern town, which is now in a ruinous state. Long. 82° 10' E., lat. 26° 45' N.

OUDE, a small river of Scotland, in Angyle-shire, which falls into the head of Loch Melfort.

OUDE HASLE, a village in the north-east of the Netherlands, province of Friesland, with 900 inhabitants. Eighteen miles south by east of Leeuwarden.

OUDENARDE, or AUDENARDE, a manufacturing town of the Netherlands on the Scheldt, by which it is divided into two parts. It has sustained several well known sieges, but is best known in history from the victory gained over the French here, in 1708, by prince Eugene and the duke of Marlborough. The battle took place on 11th of July, in the afternoon, the allies having to make a very long previous march, and the position of the French was so favorable, that the duke of Marlborough would have declined it

had not some successes of the enemy made it imperative on him to come to close action. The result, after several fluctuations, was, that at night fall the allies had driven in and surrounded all the posts of the French army. The total loss of the latter was 15,000 men, of whom nearly half were prisoners; that of the allies 5000. The town is unfortified, but well built, and contains 5100 inhabitants, who carry on manufactures of woollen and linen. Fifteen miles south by west of Ghent, and thirty-two west of Brussels.

LOUDIN (Casimir), a French monk, born at Mezieres in 1638. He published a Supplement to Bellarmine, containing an account of the ecclesiastical writers omitted by him. He went to Leyden in 1693, became a protestant, was made librarian to the university, and died there in 1717.

LOUDRI (John Baptist), a painter, born in Paris. He acquired the principles of his art under the celebrated Largillieres, and evinced superior talent for painting animals. He painted several hunting-pieces for the king of France, which adorn some of the royal castles. Loudri was so well acquainted with the magic of his art, that he frequently pleased himself with painting white objects on white grounds, which have a fine effect. He superintended the manufactory of Beauvais, where pieces of tapestry were produced equally brilliant with the pictures which had served for their model. The king gave him a pension and apartments in the Louvre. He died at Paris, May 1st, 1755, aged seventy-four.

OVEN, *n. s.* Sax. open; Goth. *ofon*; Teut. *ofen*; Isl. and Swed. *ofn* (Goth *fon*, is fire, Mr. Thomson observes: but the Sax. *ofne*, a bank or mount, is not an improbable etymology of this word). An enclosed cavity or utensil heated by fire, for baking, &c.

He loudly brayed that like was never heard,
And from his wide devouring oven sent

A flake of fire, that, flashing in his beard,
Him all amazed.

Spenser.

Here's yet in the world hereafter, the kneading, the making of the cake, the heat of the oven, and the baking.

Shakspeare.

Bats have been found in ovens and other hollow close places, matted one upon another; and therefore it is likely that they sleep in the winter and eat nothing.

Bacon.

AN OVEN is a kind of domestic furnace, used for baking, of a circular structure, with a very low roof, well lined, on the top, bottom, and sides, with stone; it has a small entrance in the front, which is exactly fitted by a kind of door. It appears from the kiln-burnt pottery which has been discovered in the British sepulchres, and from the British appellation of an *odyn* or oven, that furnaces for baking were generally known among the original Britons. An *odyn* was generally erected at the mansion of each British baron, for the use of himself and his retainers.

OVER, *prep. & adv.* Saxon *ofne*; Gothic *ufar*, *ofer*; Swed. *ofwer*; Teut. *obere*. Above; across, as applied to a stream; upon; diffused; opposed both to below and under; and applied to place, time (when it sometimes signifies before as in 'over night'). Station in life; rule, or au-

thority; &c. As an adverb, beyond measure, or an assigned quantity; above the top; (hence, extraordinary); from side to side; throughout; completely: on the whole surface; from beyond sea; past in point of time; and, repeated, another time; as in 'over and over.' 'Over and above,' means besides; beyond a first supposition or intention: 'over against,' opposite: 'to give over,' to cease from; also to help or attempt to benefit no longer. Over is used so variously and extensively in composition that we can only refer to the extracts as generally expressive of more than enough, too much, and to the more regular and established compounds that follow.

The first came out red all over, like an hairy garment. *Genesis.*

When they did mete it, he that gathered much had nothing over, and he that gathered little had no lack. *Exodus, xvi. 18.*

On their intended journey to proceed,
And over night whatso thereto did need. *Hubberd.*

Even here likewise the laws of nature and reason be of necessary use; yet somewhat over and besides them is necessary, namely, human and positive law. *Hooker.*

Soliman pausing upon the matter, the heat of his fury being something over, suffered himself to be intreated. *Knolles.*

The street should see as she walkt over head. *Shakspeare.*

Well,
Have you read o'er the letters I sent you? *Id.*

He over and over divides him,
'Twixt his unkindness and his kindness. *Id.*
Devilish Macbeth

By many of these strains hath sought to win me into his power; and modest wisdom plucks me from over-credulous haste. *Id. Macbeth.*

Certain lakes and pits, such as that of Avennes, poison birds which fly over them. *Bacon.*

It hath a white berry, but is not brought over with the coral. *Bacon's Natural History.*

Wise governors have as great a watch over fames, as they have of the actions and designs. *Bacon.*

This golden cluster the herald delivereth to the Tisan, who delivereth it over to that son that he had chosen. *Id.*

Meditate upon the effects of anger; and the best time to do this is to look back upon anger when the fit is over. *Id.*

The ordinary soldiers having all their pay, and a month's pay over, were sent into their countries. *Hayward.*

All the world over, those that received not the commands of Christ and his doctrines of purity and perseverance, were signally destroyed. *Hammond.*

The act of stealing was soon over, and cannot be undone, and for it the sinner is only answerable to God or his viceregent. *Taylor.*

What the garden choicest bears
To sit and taste, till this meridian heat
Be over, and the sun more cool decline. *Milton.*

Angelic quires
Sung heavenly anthems of his victory
Over temptation and the tempter proud. *Id.*

Thrice happy is that humble pair,
Beneath the level of all care;
Over whose head those arrows fly,
Of sad distrust and jealousy. *Waller.*

Young Pallas shone conspicuous o'er the rest;
Gilded his arms, embroidered was his vest. *Dryden.*

Thou, my Hector, art thyself alone,
My parents, brothers, and my lord in one;
O kill not all my kindred o'er again,
Nor tempt the dangers of the dusty plain;
But in this tower for our defence remain. *Id.*

Captain, yourself are the fittest to live and reign,
not over, but next and immediately under the people. *Id.*

He gathered a great mass of treasure, and gained over and above the good will and esteem of all people wherever he came. *L'Extrange.*

When children forget, or do an action aukwardly, make them do it over and over again, till they are perfect. *Locke.*

This part of grammar has been much neglected, as some others over-diligently cultivated. It is easy for men to write one after another of cases and genders. *Id.*

The fan of an Indian king, made of the feathers of a peacock's tail, composed into a round form, bound altogether with a circular rim, above a foot over. *Grew.*

Let them argue over all the topics of divine goodness and human weakness, yet how trifling must be their plea! *South's Sermons.*

The church has over her bishops, able to silence the factious, no less by their preaching than by their authority. *South.*

Over against this church stands a large hospital, erected by a shoemaker. *Addison on Italy.*

If this miracle, of Christ's rising from the dead, be not sufficient to convince a resolved libertine, neither would the rising of one now from the dead be sufficient for that purpose; since it would only be the doing that over again which hath been done already. *Atterbury.*

He will, as soon as his first surprise is over, begin to wonder how such a favour came to be bestowed on him. *Id.*

The eastern people determined their digit by the breadth of barley corns, six making a digit, and twenty-four a hand's breadth: a small matter over or under. *Id.*

These, when they praise, the world believes no more
Than when they promise to give scribbling o'er. *Pope.*

The commentary which attends this poem will have one advantage over most commentaries, that it is not made upon conjectures. *Id.*

It will afford field enough for a divine to enlarge on, by showing the advantages which the Christian world has over the heathen. *Swift.*

The most learned will never find occasion to act over again what is fabled of Alexander the Great, that when he had conquered the eastern world, he wept for want of more worlds to conquer. *Watts.*

They brought new customs and new vices o'er;
Taught us more arts than honest men require. *Philips.*

He crammed his pockets with the precious store,
And every night reviewed it o'er and o'er. *Harte.*

Throw the broad ditch behind you; o'er the hedge,
High bound, resistless; nor the deep morass
Refuse, but through the shaking wilderness
Pick your nice way. *Thomson.*

Forced from home and all its pleasures,
Afric's coast I left forlorn;
To increase a stranger's treasures,
O'er the raging billows borne. *Cowper.*

Oh! who can tell? save he whose heart hath tried
And danced in triumph o'er the waters wide,
The exulting sense—the pulses maddening play,
That thrills the wanderer o'er that trackless way. *Byron.*

Drenched each smart garb, and clogged each struggling limb,
Far o'er the stream the cockneys sink or swim.

Canning.

OVER-ABOUND', v. n. Over and abound. To abound more than enough.

Both imbibe
Fitting congenial juice, so rich the soil,
So much does fructuous moisture o'er-abound.

Philips.

The learned, never over-abounding in transitory coin, should not be discontented.

Pope's Letters.

OVER-ACT', v. a. Over and act. To act more than enough.

You over-act, when you should underdo :
A little call yourself again, and think.

Ben Jonson.

Princes courts may over-act their reverence, and make themselves laughed at for their foolishness and extravagant relative worship.

Stillingsfleet.

Good men often blemish the reputation of their piety, by over-acting some things in religion ; by an indiscreet zeal about things wherein religion is not concerned.

Tillotson.

He over-acted his part ; his passions, when once let loose, were too impetuous to be managed.

Atterbury.

OVERALL (John), a celebrated English bishop, born in 1559, educated at St. John's College, Cambridge ; but, removing to Trinity, was chosen fellow of that college. In 1596 he was made regius professor of divinity and D. D., and elected master of Catherine-hall. In 1601 he was made dean of St. Paul's, London, by the recommendation of Sir Fulk Greville and queen Elizabeth ; and in king James's reign he was chosen prolocutor of the lower house of convocation. In 1612 he was appointed one of the first governors of the Charter-house hospital, and in April 1614 he was made bishop of Litchfield and Coventry ; and in 1618 was translated to Norwich where he died in May 1619, aged sixty. He was buried in that cathedral, where after the restoration, Cosin, bishop of Durham, who had been his secretary, erected a monument to him, with this inscription, *Vir undequaque doctissimus, et omni encomio major.* Wood says, he was the best scholastic divine in England. He is also celebrated by Smith for his distinguished wisdom, erudition, and piety. In the controversy about predestination and grace, he held a middle opinion inclining to Arminianism. He seems indeed to have paved the way for the reception of that doctrine in England. The bishop is known in England chiefly by his Convocation Book.

OVER-ARCH', v. a. Over and arch. To cover as with an arch.

Where high Ithaca o'erlooks the floods,
Brown with o'er-arching shades and pendent woods.

Pope.

OVER-AWE', v. a. Over and awe. To keep in awe by superior influence.

The king was present in person to overlook the magistrates, and to over-awe these subjects with the terror of his sword.

Spenser.

Her graceful innocence, her every air

Of gesture, or least action, over-awed

His malice.

Milton's Paradise Lost.

I could be content to be your chief tormentor, ever paying you mock reverence, and sounding in

your ears the empty title which inspired you with presumption, and over-awed my daughter to comply.

Addison's Guardian.

A thousand fears

Still over-awe when she appears.

Granville's Poems.

Thus free from censure, over-awed by fear,
And praised for virtues that they scorn to wear,
The floating forms of majesty engage
Respect, while stalking o'er life's narrow stage,
Then leave their crimes for history to scan,
And ask with busy scorn, ' Was this the man ?'

Cowper.

OVER-BAL'ANCE, v. a. & n. s. To weigh down ; to preponderate. Something more than equivalent.

Not doubting but by the weight of reason I should counterpoise the over-balancings of any factions.

King Charles.

Our exported commodities would, by the return, encrease the treasure of this kingdom above what it can ever be by other means, than a mighty over-balance of our exported to our imported commodities.

Temple.

The mind should be kept in a perfect indifference, not inclining to either side, any further than the over-balance of probability gives it the turn of assent and belief.

Locke.

The hundred thousand pounds per annum, wherein we over-balance them in trade, must be paid us in money.

Id.

When these important considerations are set before a rational being, acknowledging the truth of every article, should a bare single possibility be of weight enough to overbalance them ?

Rogers.

OVER-BATTLE, adj. From over and battle. Too fruitful ; exuberant.

In the church of God sometimes it cometh to pass, as in over-battle grounds ; the fertile disposition wherof, is good, yet, because it exceedeth due proportion, it bringeth abundantly, through too much rankness, things less profitable, whereby that which principally it should yield, either prevented in place or defrauded of nourishment, faileth.

Hooker.

OVER-BEAR', v. a. Over and bear. To repress : to subdue ; to whelm ; to bear down.

What more savage than man, if he see himself able by fraud to over-reach, or by power to over-bear the laws ?

Hooker.

The Turkish commanders, with all their forces, assailed the city, thrusting their men into the breaches by heaps, as if they would, with very multitude, have discouraged or over-born the Christians.

Knolles.

The ocean, over-peering of his list,
Eats not the flats with more impetuous haste,
Than young Laertes, in a riotous head,
O'er-bears your officers.

Shakespeare. Hamlet.

The point of reputation, when news first came of the battle lost, did over-bear the reason of war.

Bacon.

Yet fortune, valour, all is over-born

By numbers ; as the long resisting bank

By the impetuous torrent.

Denham.

A body may as well be over-born by the violence of a shallow rapid stream, as swallowed up in the gulph of smooth water.

L'Estrange.

The judgment, if swayed by the over-hearing of passion, and stored with lubricious opinions instead of clearly conceived truths, will be erroneous.

Glanville's Serpens.

Take care that the memory of the learner be not too much crowded by a tumultuous heap, or over-bearing multitude of documents at one time.

Watts.

The horror or loathsomeness of an object may over-bear the pleasure which results from its greatness, novelty, or beauty.

Addison.

OVER-BID, *v. a.* Over and bid. To offer more than equivalent.

You have o'er-bid all my past sufferings,
And all my future too. *Dryden's Spanish Friar.*

OVER-BLOW, *v. n. & v. a.* Over and blow. To be past its violence.

Led with delight, they thus beguile the way,
Until the blustering storm is over-blown. *Spenser.*

This ague fit of fear is over-blown,
An easy task it is to win our own.

Shakespeare.

Some angel that beholds her there,
Instruct us to record what she was here;
And when this cloud of sorrow's over-blown,
Through the wide world we'll make her graces known.

Waller.

Seized with secret joy,
When storms are over-blown.

Dryden's Virgils.

OVERBOARD, *adj.* Over and board. See **BOARD**. Off the ship, out of the ship.

The great assembly met again; and now he that was the cause of the tempest being thrown over-board, there were hopes a calm should ensue.

Hemphill.

The trembling dotard to the deck he drew,
And hoisted up and over-board he threw;
This done he seized the helm. *Dryden.*
He obtained liberty to give them only one song before he leaped over-board, which he did, and then plunged into the sea. *L'Estrange.*

A merchant having a vessel richly fraught at sea in a storm, there is but one certain way to save it, which is, by throwing its rich lading over-board.

South.

Though great ships were commonly bad sea-boats, they had a superior force in a sea engagement: the shock of them being sometimes so violent, that it would throw the crew on the upper deck of lesser ships over-board.

Arbutnot.

Then rose from sea to sky the wild farewell,
Then shrieked the timid, and stood still the brave,

Then some leaped over-board with dreadful yell,
As eager to anticipate their grave. *Byron.*

OVER-BULK, *v. a.* Over and bulk. To oppress by bulk.

The feeding pride,
In rank Achilles, must or now be cropt,
Or shedding, breed a nursery of like evils,
To over-bulk us all.

Shakespeare. *Troilus and Cressida.*

OVER-BURDEN, *v. a.* Over and burden. To load with too great weight.

If she were not cloyed with his company, and that she thought not the earth over-burdened with him, she would cool his fiery grief. *Sidney.*

OVERBURY (Sir Thomas), a learned and accomplished English gentleman, was born in 1581, and studied at Oxford. His intimacy with Sir Robert Carr procured him the honor of knighthood, and also occasioned his death. When Sir Robert became viscount Rochester, he contracted an intimacy with the courtess of

Essex, of which Sir Thomas disapproved in so plain terms, that the viscount treacherously used his influence with the king to inspire him with unjust suspicions of the baronet, who was thrown into the tower, where, in the course of a few months, he was poisoned, in 1613. The treachery was afterwards discovered, but the murderers were only punished with a temporary banishment from court. He published an account of his travels on the continent, and several poems.

OVER-BUY, *v. a.* Over and buy. To buy too dear.

He, when want requires, is only wise,
Who slights not foreign aids, nor over-buys;
But on our native strength, in time of need, relies.

Dryden.

OVER-CARRY, *v. a.* Over and carry. To hurry too far; to be urged to any thing violent or dangerous.

He was the king's uncle, but yet of no capacity to succeed; by reason whereof his natural affection and duty was less easy to be over-carried by ambition.

Bayward.

OVER-CAST, *v. a. & part.*, overcast. Over and cast. To cloud; to darken; to cover with gloom. To cover. This sense is hardly retained but by needle women, who call that which is encircled with a thread, overcast; to rate too high.

Their arms abroad with gray moss over-cast,
And their green leaves trembling with every blast.

Spenser.

As they past,

The day with clouds was sudden over-cast. *Id.*
When malice would work that which is evil, and in working avoid the suspicion of an evil intent, the color wherewith it over-casteth itself is always a fair and plausible pretence of seeking to further that which is good.

Hooker.

His, Robin, over-cast the night;
The starry walkin cover thou anon,
With drooping fogs as black as Acheron.

Shakespeare.

Our days of act are sad and over-cast, in which we find that all of our vain passions and affections past, the sorrow only abideth.

Raleigh.

The king, in his account of peace and calms, did much over-cast his fortunes, which proved full of broken seas, tides, and tempests.

Bacon.

I of fumes and humid vapors made,
No cloud in so serene a mansion find,
To over-cast her ever-shining mind. *Waller.*

Those clouds that over-cast our morn shall fly,
Dispelled to farthest corners of the sky. *Dryden.*

The dawn is over-cast, the morning lours,
And heavily in clouds brings on the day.

Addison.

OVER-CHARGE, *v. a.* Over and charge. To burden; to overrate; to fill too full; to oppress; to cloy; to surcharge.

Here's Gloster, a foe to citizens,
O'er-charging your free purses with large fines.

Shakespeare.

They were

As canons over-charged with double cracks. *Id.*

On air we feed in every instant, and on meats but at times; and yet the heavy load of abundance, wherewith we oppress and overcharge nature, maketh her to sink unawares in the mid-way.

Raleigh's History of the World.

Who in deep mines for hidden knowledge toils,
Like guns o'er-charged, breaks, misses, or recoils.

Denham.

If they would make distinct abstract ideas of all
the varieties in human actions, the number must be in-
finite, and the memory *over-charged* to little purpose.

Locke.

The fumes of passion do as really intoxicate,
and confound the judging and discerning faculty, as
the fumes of drink discompose and stupify the brain
of a man *over-charged* with it.

South.

The action of the Iliad and Æneid, in themselves
exceeding short, are so beautifully extended by the
invention of episodes, that they make up an agree-
able story sufficient to employ the memory without
over-charging it.

Addison's Spectator.

A man may as well expect to grow stronger by al-
ways eating, as wiser by always reading. Too much
over-charges nature, and turns more into disease than
nourishment.

Collier.

Our language is *over-charged* with consonants.

Pope.

OVER-CLOUD', v. a. Over and cloud. To
cover with clouds.

The silver empress of the night,
O'er-clouded, glimmers in a fainter light.

Titchel.

OVER-CLOY', v. a. Over and cloy. To fill
beyond satiety.

A swarm of Britons and base lacquey peasants,
Whom their *over-cloyed* country vomits forth
To desperate adventures and destruction.

Shakespeare.

OVERCOME', v. a. } To subdue; to con-
OVERCOMER, n. s. } quer; to surmount or
overflow; to invade suddenly.

Of whom a man is *overcome*, of the same is he
brought in bondage.

2 Peter, ii. 19.

This wretched woman, *overcome*
Of anguish rather than of crime hath been.

Spenser.

Can't such things be
And *overcome* us like a summer's cloud,
Without our special wonder?

Shakespeare.

Fire by thicker air o'ercome,
And downward forced in earth's capacious womb,
Alters its particles : is fire no more.

Prior.

In unfallowed glebe
Yearly o'ercomes the granaries with stores.

Philip.

Miranda is a constant relief to poor people in
their misfortunes and accidents; there are sometimes
little misfortunes that happen to them, which of
themselves they could never be able to *overcome*.

Law.

OVER-COUNT', v. a. Over and count. To
rate above the true value.

Thou knowest how much
We do o'ercount thee.

Shakespeare. Antony and Cleopatra.

OVER-COVER, v. a. Over and cover. To
cover completely.

Shut me nightly in a charnel house,
O'er-covered quite with dead men's rattling bones
With reeky shanks and yellow chapless skulls.

Shakespeare.

OVER-CROW', v. a. Over and crow. To
crow as in triumph.

A base varlet, that being but of late grown out of
the dunghill, beginneth now to *overcrow* so high
mountains, and make himself the great protector of
all outlaws.

Spenser.

OVERDO', v. a. Over and do. To do more
than enough.

Any thing so *over-done* is from the purpose of play-
ing; whose end is to hold the mirror up to nature.

Shakespeare.

Nature, so intent upon finishing her work, much
oftener *over-does* than under does. You shall hear of
twenty animals with two heads, for one that hath
none.

Grass.

When the meat is *over-done*, lay the fault upon
your lady who hurried you.

Swift.

OVER-DRESS, v. a. Over and dress. To
adorn lavishly.

In all, let Nature never be forgot;
But treat the goddess like a modest fair,
Nor *over-dress* nor leave her wholly bare.

Pope.

OVER-DRIVE', v. a. Over and drive. To
drive too hard or beyond strength.

The flocks and herds with young, if men should
over-drive one day, all will die.

Gen. xxxiii. 13.

OVER-EYE', v. a. Over and eye. To super-
intend; to observe; to remark.

I am doubtful of your modesties,
Lest *over-eying* of his odd behaviour,
You break into some merry passion.

Shakespeare.

OVER-EMPTY, v. a. Over and empty. To
make too empty.

The women would be loth to come behind the
fashion in newfangledness of the manner, if not to
costliness of the matter, which might *over-empty* their
husband's purses.

Carver.

OVERFAL', n. s. Over and fall. Cataract.
Tostatus addeth, that those which dwell near those
falls of water, are deaf from their infancy, like those
that dwell near the *overfalls* of Nilus.

Raleigh's History of the World.

OVER-FLOAT, v. n. Over and float. To
swim; to float.

The town is filled with slaughter, and o'erfloats,
With a red deluge, their increasing moats.

Dryden.

OVERFLOW', v. n., v. a., & n. s. } To be
OVERFLOWING, n. s. } fuller than
OVERFLOWINGLY, adv. } the brim
can hold; to abound; deluge, or drown; to
overrun: the noun signifies exuberance, as also
overflowing. Overflowingly is, exuberantly; in
great abundance.

The Scythians, at such time as the northern na-
tions *overflowed* all Christendom, came down to the
sea coast.

Spenser.

Did he break out into tears?
—In great measure.
—A kind *overflow* of kindness.

Shakespeare.

Where there are great *overflows* in fens, the drown-
ing of them in winter maketh the summer following
more fruitful; for that it keepeth the ground warm.

Bacon's Natural History.

Suppose thyself in as great a sadness as ever did
load thy spirit, would'st thou not bear it cheerfully
if thou wert sure that some excellent fortune would
relieve and recompense thee so as to *overflow* all thy
hopes?

Taylor.

When men are young, they might vent the *over-
flowings* of their fancy that way.

Denham.

Nor was it his indigence that forced him to make
the world, but his goodness pressed him to impart
the goods which he so *overflowingly* abounds with.

Boyle.

New milk that all the winter never fails,
And all the summer *over-flows* the pails.

Dryden.

While our strong walls secure us from the foe,
Ere yet with blood our ditches *overflow*. *Id.*

It requires pains to find the coherence of abstruse writings: so that it is not to be wondered that St. Paul's epistles have, with many, passed for disjointed pious discourses, full of warmth and zeal and *over-flows* of light, rather than for calm, strong, coherent reasonings all through. *Locks.*

Had I the same consciousness that I saw Noah's flood, as that I saw the *overflowing* of the Thames last winter, I could not doubt, that I who saw the Thames *overflowed*, and viewed the flood at the general deluge, was the same self. *Id.*

Do not the Nile and the Niger make yearly inundations in our days, as they have formerly done? and are not the countries so *overflowed* still situate between the tropics? *Bentley.*

Sixteen hundred and odd years after the earth was made it was *overflowed* and destroyed in a deluge of water, that overspread the face of the whole earth, from pole to pole, and from east to west. *Burnet.*

After every *overflow* of the Nile there was not all ways a mensuration. *Arbutnot on Coins.*

The expression may be ascribed to an *overflow* of gratitude in the general disposition of Ulysses.

Broome.

When the *overflowings* of ungodliness make us afraid, the ministers of religion cannot better discharge their duty of opposing it. *Rogers.*

Thus oft by mariners are shown,
Earl Godwin's castles *overflowed*. *Swift.*

OVER-FLY', *v. a.* Over and fly. To cross by flight.

A sailing kite
Can scare *o'er-fly* them in a day and night.

Dryden.

OVER-FORWARDNESS, *n. s.* Over and forwardness. Too great quickness: too great readiness.

By an *over-forwardness* in courts to give countenance to frivolous exceptions, though they make nothing to the true merit of the cause, it often happens that causes are not determined according to their merits. *Hale.*

OVER-FREIGHT', *v. a.*; *pret.* overfreighted; *part.* over-fraught. Over and freight. To load too heavily; to fill with too great quantity.

A boat *over-freighted* with people, in rowing down the river, was, by the extreme weather, sunk. *Carow.*

Grief, that does not speak,
Whispers the *o'er-fraught* heart and bids it break. *Shakespeare.*

Sorrow has so *o'er-fraught*
This sinking bark, I shall not live to show
How I abhor my first rash crime. *Denham.*
OVERGET', *v. a.* Over and get. To pass; to leave behind.

With six hours hard riding through so wild places, as it was rather the cunning of my horse sometimes, than of myself, so rightly to hit the way, I *over-got* them a little before night. *Sidney.*

OVER-GLANCE', *v. a.* Over and glance. To look hastily over.

I have, but with a cursory eye,
O'er-glanced the articles.

Shakespeare, Henry V.

OVER-GO', *v. a.* Over and go. To surpass; to excel.

Thinking it beyond the degree of humanity to have a wit so far *over-going* his age, and such dreadful terror proceed from so excellent beauty. *Sidney.*

Great nature hath laid down at last
That mighty birth wherewith so long she went,
And *over-went* the times of ages past,
Here to lie in upon our soft content. *Daniel.*

OVER-GORGE', *v. a.* Over and gorge. To gorge too much.

Art thou grown great
And, like ambitious Sylla, *over-gorged*?

Shakespeare.

OVER-GREAT', *adj.* Over and great. Too great.

Though putting the mind unprepared upon an unusual stress ought to be avoided: yet this must not run it, by an *over-great* shyness of difficulties, into a lazy sauntering about obvious things. *Locke.*

OVER-GROW', *v. a. & v. n.* } Over and grow.
OVER-GROWTH', *n. s.* } To cove: with growth; to grow beyond the fit and natural size, to rise above: overgrowth is exuberant or excessive growth.

Roof, and floor, and walls, were all of gold,
But *over-grown* with dust and old decay,
And hid in darkness that none could behold
The hue thereof. *Spenser.*
One part of his army, with incredible labour, cut away through the thick and *over-grown* woods, and so came to Solymán. *Knolles.*

The *over-growth* of some complexion,
Oft breaking down the pales and forts of reason. *Shakespeare.*

The fortune in being the first in an invention doth cause sometimes a wonderful *over-growth* in riches. *Bacon.*

Suspected to a sequent king, who seeks
To stop their *over-growth*, as inmate guests
Too numerous. *Milton's Paradise Lost.*

The woods and desert caves,
With wild thyme and the gadding vine *o'er-grown*,
And all their echoes mourn. *Milton.*

A huge *over-grown* ox was grazing in a meadow. *L'Estrange.*

If the binds be very strong and much *over-grow* the poles, some advise to strike off their heads with a long switch. *Mortimer.*

Him for a happy man I own,
Whose fortune is not *over-grown*. *Swift.*

OVER-HALE', *v. a.* Over and hale. To spread over.

The welked Phœbus gan avail
His weary wain, and now the frosty night
Her mantle black thro' heaven gan *over-hale*. *Spenser.*

OVER-HANG', *v. a. & v. n.* Over and hang. To jut over; to impend over.

Lend the eye a terrible aspect,
Let the brow overwhelm it,
As fearfully as doth a galled rock
O'er-hang and jutting his confounded base. *Shakespeare.*

The rest was chaggy cliff, that *overhang*
Still as it rose, impossible to climb. *Milton.*
Hide me, ye forests, in your closest bowers,
Where flows the murm'ring brook, inviting dreams,
Where bord'ring hazle *over-hangs* the streams. *Gay.*
If you drink tea upon a promontory that *over-hangs* the sea, it is preferable to an assembly. *Pope.*

OVER-HARDEN', *v. a.* Over and harden. To make too hard.

By laying it in the air, it has acquired such a hardness, that it was brittle, like *over-hardened* steel.

Boyle.

OVER-HEAD', *adv.* Over and head. Aloft; in the zenith; above; in the ceiling.

Over-head the moon

Sits arbitress, and nearer to the earth

Wheels her pale course. *Milton's Paradise Lost.*

The four stars *over-head* represent the four children.

Addison.

Now *over-head*, a rainbow, bursting through

The scattering clouds, shone—spanning the dark sea,

Resting its bright base on the quivering blue.

Byron.

OVER-HEAR', *v. a.* Over and hear. To hear those who do not mean to be heard.

I am invisible

And I will *over-hear* their conference. *Shakespeare.*

They had a full sight of the Infanta at a mask dancing, having *over-heard* two gentlemen who were tending towards that sight, after whom they pressed.

Wotton.

That such an enemy we have who seeks

Our ruin, both by thee informed I learn,

And from the parting angel *over-heard*. *Milton.*

They were so loud in their discourse, that a blackberry from the next bridge *over-heard* them.

L'Estrange.

The nurse,

Though not the words, the murmurs *over-heard*.

Dryden.

The witness, *over-hearing* the word pillory repeated, slunk away privately.

Addison.

OVER-HEAT', *v. a.* Over and heat. To heat too much.

Pleased with the form and coolness of the place, And *over-heated* by the morning chase. *Addison.*

It must be done upon the receipt of the wound, before the patient's spirit be *over-heated* with pain or fever.

Wiseman.

And to confound two things together, which are so essentially different, can be the effect of nothing but great ignorance, inconsideration, or an *over-heated* injudicious zeal.

Mason.

OVER-HEND', *v. a.* Over and hend. To overtake; to reach.

Als his fair leman flying through a brook, He *over-hent* naught moved with her piteous look.

Spenser.

OVER-JOY', *v. a. & n. s.* Over and joy. To transport; to ravish: in the noun, transport; ecstasy.

The mutual conference that my mind hath had, Makes me the bolder to salute my king With ruder terms; such as my wit affords, And *over-joy* of heart doth minister.

Shakespeare.

He that puts his confidence in God only, is neither *over-joyed* in any great good things of this life, nor sorrowful for a little thing.

Taylor's Guide.

The bishop, partly astonished and partly *over-joyed* with these speeches, was struck into a sad silence for a time.

Hayward.

This love-sick virgin, *over-joyed* to find

The boy alone, still followed him behind.

Addison.

OVER-LABOR', *v. a.* Over and labor. To take too much pains on any thing; to harass with toil.

She without noise will *over-see*

His children and his family;

And order all things till he come,

Sweaty and *over-laboured* home. *Dryden.*

OVERLADE', *v. a.* Over and lade. To overburden.

Thus to throng and *over-lade* a soul

With love, and then to have a room for fear,

That shall all that controul,

What is it but to rear

Our passions and our hopes on high,

That thence they may descry

The noblest way how to despair and die?

Suckling.

OVERLARGE', *adj.* Over and large. Larger than enough.

Our attainments cannot be *over-large*, and yet we manage a narrow fortune very unthrifily.

Collier.

OVERLASHINGLY, *adv.* Over and lash. With exaggeration. A mean word, now obsolete.

Although I be far from their opinion who write too *overlashingly*, that the Arabian tongue is in use in two third parts of the inhabited world, yet I find that it extendeth where the religion of Mahomet is professed.

Brerewood.

OVERLAY', *v. a.* Over and lay. To oppress by too much weight or power; to smother; to overwhelm; to cover superficially.

Some commons are barren, the nature is such, And some *over-layeth* the commons too much.

Tusser.

Phœbus' golden face it did attain,

As when a cloud his beams did *over-lay*.

Spenser.

Not only that mercy which keepeth from being *over-laid* and oppressed, but mercy which saveth from being touched with grievous miseries.

Hooker.

When any country is *over-laid* by the multitude which live upon it, there is a natural necessity compelling it to disburden itself and lay the load upon others.

Raleigh.

We praise the things we hear with much more willingness than those we see; because we envy the present, and reverence the past; thinking ourselves instructed by the one, and *over-laid* by the other.

Ben Jonson.

Good laws had been antiquated by the course of time, or *over-laid* by the corruption of manners.

King Charles.

Nor then destroys it with too fond a stay, Like mothers, which their infants *over-lay*.

Milton.

Thou us impowered

To fortify thus far, and *over-lay*,

With this portentous bridge, the dark abyss. *Id.*

By his prescript a sanctuary is framed

Of cedar, *over-laid* with gold. *Id.*

The strong Emetrius came in Arcite's aid,

And Palamon with odds was *over-laid*. *Dryden.*

The stars, no longer *over-laid* with weight,

Exert their heads from underneath the mass,

And upward shoot. *Id.*

They quickly stifled and *over-laid* those infant principles of piety and virtue, sown by God in their hearts; so that they brought a voluntary darkness and stupidity upon their minds.

South's Sermons.

Season the passions of a child with devotion, which seldom dies; though it may seem extinguished for a while, it breaks out as soon as misfortunes have brought the man to himself. The fire may be covered and *over-laid*, but cannot be entirely quenched and smothered.

Addison's Spectator.

In preaching, no men succeed better than those who trust to the fund of their own reason, advanced but not *over-laid* by commerce with books. *Swift.*

OVER-LEAP', v. a. Over and leap. To pass by a jump.

A step
On which I must fall down, or else *o'er-leap*,
For in my way it lies. *Shakespeare. Macbeth.*
In vain did Nature's wise command
Divide the waters from the land;
If daring ships and men prophane
The eternal fences *over-leap*,
And pass at will the boundless deep. *Dryden.*

OVER-LEATHER, n. s. Over and leather. The part of the shoe that covers the foot.
I have sometimes more feet than shoes; or such shoes as my toes look through the *over-leather*.
Shakespeare.

OVER-LIGHT, n. s. Over and light. Too strong light.

An *over-light* maketh the eyes dark, insomuch as perpetual looking against the sun would cause blindness.
Bacon.

OVER-LIVE, v. a. & v. n. Over and live. To live longer than another; to survive; to outlive; to live too long.

Musidorus, who shewed a mind not to *over-live* Pyrocles, prevailed.
Sidney.

He concludes in hearty prayers,
That your attempts may *over-live* the hazard
And fearful meeting of their opposite.

Shakespeare.
They *over-lived* that envy, and had their pardons afterwards.
Hayward.

Why do I *over-live*?
Why am I mecked with death, and lengthened out
To deathless pain? *Milton's Paradise Lost.*

OVER-LOAD, v. a. Over and load. To burden with too much.

The memory of youth is charged and *over-loaded*, and all they learn is mere jargon.
Felton.

Men *over-loaded* with a large estate
May spill their treasure in a nice conceit;
The rich may be polite, but oh! 'tis sad,
To say you're curious, when we swear you're mad.
Young.

OVER-LONG, adj. Over and long. Too long.

I have transgressed the laws of oratory, in making my periods and parenthesis *over-long*.
Boyle.

OVER-LOOK, v. a. } Over and look. To
OVER-LOOKER, n. s. } view from a high place; to revise; to watch over; to pass indulgently over a fault; to neglect: an overlooker is one who watches over others.

He was present in person to *over-look* the magistrates, and to overawe those subjects with the terror of his sword.
Spenser.

In the greater out-parishes many of the poor parishioners, through neglect, do perish for want of some heedful eye to *over-look* them.
Grass.

The time and care that are required,
To *over-look* and file, and polish well,
Fright poets from that necessary toil.

Rowe.
I will do it with the same respect to him as if he were alive, and *over-looking* my paper while I write.
Dryden.

The pils *o'er-looked* the town, and drew the sight,
Surprised at once with reverence and delight. *Id.*
Of the two relations, Christ *o'er-looked* the meaner, and denominated them solely from the more honourable.
South.

Religious fear, when produced by just apprehensions of a divine power, naturally *over-looks* all hu-

man greatness that stands in competition with it, and extinguishes every other terror.
Addison.

This part of good-nature, which consists in the pardoning and *o'er-looking* of faults, is to be exercised only in doing ourselves justice in the ordinary commerce of life.
Id.

In vain do we hope that God will *over-look* such high contradiction of sinners, and pardon offences committed against the plain conviction of conscience.
Rogers.

They *over-look* truth in the judgments they pass on adversity and prosperity. The temptations that attend the former they can easily see, and dread at a distance; but they have no apprehension of the dangerous consequences of the latter.
Atterbury.

To *over-look* the entertainment before him, and languish for that which lies out of the way, is sickly and servile.
Collier.

The original word signifies an *over-looker*, or one who stands higher than his fellows and *over-looks* them.
Watts.

OVER-LOOP, n. s. The same with orlop.

In extremity we carry our ordnance better than we were wont, because our nether *over-loops* are raised commonly from the water; to wit, between the lower part of the port and the sea.
Raleigh.

OVER-MASTED, adj. Over and mast. Having too much mast.

Cleodanthus, better manned, pursued him fast,
But his *o'er-masted* gally checked his haste.
Dryden.

OVER-MASTER, v. a. Over and master. To subdue; to govern.

For your desire to know what is between us,
O'er-master it as you may. *Shakespeare. Hamlet.*
So sleeps a pilot whose poor bark is prest
With many a merciless *o'er-mastering* wave.
Crashaw.

They are *over-mastered* with a score of drunkards, the only soldiery left about them, or else comply with all rapines and violences.
Milton on Education.

OVER-MATCH, v. a. & n. s. Over and match. To be too powerful; to conquer; to oppress by superior force: the noun signifies one of superior power; one not to be overcome.

I have seen a swan
With bootless labour swim against the tide,
And spend her strength with *over-matching* waves.
Shakespeare.

Sir William Lucy, with me
Set from our *o'er-matched* forces forth for aid. *Id.*
Spain is no *over-match* for England, by that which leadeth all men; that is, experience and reason.
Bacon.

Assist, lest I, who erst
Thought none my equal, now be *o'er-matched*.
Paradise Regained.

Eve was his *over-match*, who self-deceived
And rash, before-hand had no better weighed
The strength he was to cope with or his own.
Milton.

He from that length of time dire omens drew,
Of English *o'er-matched*, and Dutch too strong,
Who never fought three days but to pursue.
Dryden.

How great soever our curiosity be, our excess is greater, and does not only *o'er-match*, but supplant it.
Decay of Piety.

In a little time there will scarce be a woman of quality in Great Britain, who would not be an *o'er-match* for an Irish priest.
Addison.

OVER-MIX', v. a. Over and mix. To mix with too much.

Those things these parts over-rule; no joy shall know,

Or little measure *over-mixt* with woe. *Cresch.*

OVERMUCH', adj., adv. & n. s. } Over and *OVERMUCH'NESS, n. s. }* much. More

than enough. In too great a degree: overmuchness is superabundance.

The fault which we find in them is, that they *over-much* abridge the church of her power in these things. Whereupon they recharge us, as if in these things we gave the church a liberty which hath no limits or bounds. *Hooker.*

There are words that do as much raise a style, as others can depress it; superlatation and *over-muchness* amplifies. It may be above faith, but not above a mean. *Ben Jonson.*

Perhaps

I also erred, in *over-much* admiring
What seemed in thee so perfect, that I thought
No evil durst attempt thee.

Milton's Paradise Lost.

By attributing *over-much* to things
Less excellent, as thou thyself perceivest.

Milton.

It was the custom of those former ages, in their *over-much* gratitude, to advance the first authors of an useful discovery among the number of their gods. *Wilkins.*

With respect to the blessings the world enjoys, even good men may ascribe *over-much* to themselves. *Grew.*

An *over-much* use of salt, besides that it occasions thirst and *over-much* drinking, has other ill-effects. *Locke.*

OVER-NAME', v. a. Over and name. To name in a series.

Over-name them; and as thou namest them I will describe them. *Shakespeare. Merchant of Venice.*

OVER-NIGHT', n. s. Over and night. Night before bed-time.

If I had given you this at *over-night*,
She might have been o'erta'en. *Shakespeare.*
Will confesses, that for half his life his head
ached every morning with reading men *overnight*. *Addison.*

OVER-OFFICE', v. a. Over and office. To insult by virtue of an office.

This might be the fate of a politician which this *ass over-offices*. *Shakespeare. Hamlet.*

OVER-OFFICIOUS', adj. Over and officious. Too busy; too importunate.

This is an *over-officious* truth, and is always at a man's heels; so that, if he looks about him, he must take notice of it. *Collier.*

OVERPASS', v. a. Over and pass. To cross; to pass with disregard; to omit.

If the grace of him which saveth *over-pass* some, so that the prayer of the church for them be not received, this we may leave to the hidden judgments of righteousness. *Hooker.*

The complaint about psalms and hymns might as well be *over-past* without any answer, as it is without any cause brought forth. *Id.*

What can'st thou swear by now?

—By time to come.

—That thou hast wronged in the time *o'er-past*.

Shakespeare.

Arithmetical progression demonstrates how fast mankind would increase, *over-passing* as miraculous,

though indeed natural, that example of the Israelites who were multiplied in two hundred and sixteen years, from seventy to sixty thousand able men. *Kaleigh.*

Remember that Pellean conqueror,
A youth, how all the beauties of the east
He slightly viewed, and slightly *over-passed*. *Milton.*

I read the satire thou entitlest first,
And laid aside the rest, and *over-past*,
And swore, I thought the writer was accurst,
That his first satire had not been his last. *Harrington.*

I stood on a wide river's bank,
Which I must needs *o'er-pass*,
When on a sudden Torrimond appeared,
Gave me his hand, and led me lightly *o'er*. *Dryden.*

OVERPAY', v. a. Over and pay. To reward beyond the price:

Take this purse of gold,
And let me buy your friendly help thus far,
Which I will *over-pay*, and pay again,
When I have found it. *Shakespeare.*

You have yourself your kindness *over-paid*,
He ceases to oblige who can upbraid. *Dryden.*
Wilt thou with pleasure hear thy lover's strains,
And with one heavenly smile *o'er-pay* his pains? *Prior.*

A single doit would *overpay*
The expenditure of every day,
And who can grudge so small a grace
To suppliants, natives of the place? *Cowper.*

OVERPERCH', v. a. Over and perch. To fly over.

With love's light wings did I *o'er-perch* these
walls,
For stony limits cannot hold love out. *Shakespeare.*

OVERPEER', v. a. Over and peer. To over-look; to hover above. It is now out of use.

The ocean, *over-peering* of his list,
Eats not the flats with more impetuous haste,
Than young Laertes, in a riotous head,
O'er-bears your officers. *Shakespeare. Hamlet.*
Your argosies with portly sail,
Do *over-peer* the pretty traffickers,
That cur'sy to them, do them reverence.

Shakespeare.

Mountainous error would be too highly heapt,
For truth to *over-peer*. *Id. Coriolanus.*

Thus yields the cedar to the ax's edge,
Whose top branch *over-peered* Jove's spreading tree,
And kept low shrubs from winter's powerful wind. *Shakespeare.*

They are invincible by reason of the *over-peering* mountains that back the one, and slender fortifications of the other to land-ward. *Sandy's Journal.*

OVERPLUS', n. s. Over and plus. Surplus; what remains more than sufficient.

Some other sinners there are, from which that *overplus* of strength in persuasion doth arise.

Hooker's Preface.

A great deal too much of it was made, and the *overplus* remained still in the mortar. *L'Estrange.*

It would look like a fable to report that this gentleman gives away all which is the *overplus* of a great fortune. *Addison.*

OVERPLY', v. a. Over and ply. To employ too laboriously.

What supports me, dost thou ask?
The conscience, friend, 't have lost them *over-plied*,
In liberty's defence. *Milton's Poems.*

OVERPOISE', v. a. & n. s. Over and poise. To outweigh : the noun signifies preponderance of weight.

Whether cripples who have lost their thighs will float ; their lungs being able to waft up their bodies, which are in others *over-poised* by the hinder legs ; we have not made experiment. *Broune.*

Horace, in his first and second book of odes, was still rising, but came not to his meridian till the third. After which his judgment was an *over-poise* to his imagination. He grew too cautious to be bold enough, for he descended in his fourth by slow degrees. *Dryden.*

The scale
O'er-poised by darkness, lets the night prevail ;
And day, that lengthened in the summer's height,
Shortens till winter, and is lost in night. *Creech.*

OVERPOWER', v. a. Over and power. To be predominant over ; to oppress by superiority.

Now in danger tried, now known in arms
Not to be *over-powered*. *Milton's Paradise Lost.*

As much light *over-powers* the eye, so they who have weak eyes, when ground is covered with snow, are wont to complain of too much light. *Boyle.*

After the death of Crassus, Pompey found himself outwitted by Cæsar ; he broke with him, *over-powered* him in the senate, and caused many unjust decrees to pass against him. *Dryden.*

The historians make these mountains the standards of the rise of the water ; which they could never have been, had they not been standing when it did so rise and *over-power* the earth. *Woodward.*

Inspiration is, when such an *over-powering* impression of any proposition is made upon the mind by God himself, that gives a convincing and indubitable evidence of the truth and divinity of it.

Watts's Logic.

OVERPRESS', v. a. Over and press. To bear upon with irresistible force ; to overwhelm ; to crush.

Having an excellent horse under him, when he was *over-pressed* by some he avoided them. *Sidney.*

Michael's arm main promontories flung,
And *over-pressed* whole legions weak with sin.

Roscommon.

When a prince enters on a war, he ought maturely to consider whether his coffers be full, his people rich by a long peace and free trade, not *over-pressed* with many burthensome taxes. *Swift.*

OVERPRISE', v. a. Over and prise. To value at too high price.

Parents *over-prise* their children, while they behold them through the vapours of affection. *Wotton.*

OVERRANK', adj. Over and rank. Too rank.

It produces *over-rank* binds. *Mortimer.*

OVERRATE', v. a. Over and rate. To rate at too much.

While vain shows and scenes you *over-rate*,
'Tis to be feared,
That, as a fire the former house o'erthrew,
Machines and tempests will destroy the new.

Dryden.

To avoid the temptations of poverty, it concerns us not to *over-rate* the conveniences of our station, and, in estimating the proportion fit for us, to fix it rather low than high ; for our desires will be proportioned to our wants, real or imaginary, and our temptations to our desires. *Rogers.*

OVERREACH', v. a. Over and reach. To rise above ; to circumvent ; to go beyond.

What more cruel than man, if he see himself able by fraud to *over-reach*, or by power to overbear the laws whereunto he should be subject ? *Hooker.*

I have laid my brain in the sun and dried it, that it wants matter to prevent so gross *over-reaching*.

Shakespeare.

The mountains of Olympus, Atho, and Atlas, *over-reach* and surmount all winds and clouds.

Raleigh.

A man who had been matchless held
In cunning, *over-reached* where least he thought,
To save his credit, and for very spight,
Still will be tempting him who foils him still.

Milton.

There is no pleasanter encounter than a trial of skill betwixt sharpers to *over-reach* one another.

L'Estrange.

Forbidding oppression, defrauding and *over-reaching* one another, perfidiousness and treachery.

Tillotson.

We may no more sue for them than we can tell a lie, or swear an unlawful oath, or *over-reach* in their cause, or be guilty of any other transgression.

Kettleworth.

Such a principle is ambition, or a desire of fame, by which many vicious men are *over-reached*, and engaged contrary to their natural inclinations in a glorious and laudable course of action. *Addison.*

Sixteen hundred years after the earth was made, it was over-flowed in a deluge of water in such excess that the floods *over-reached* the tops of the highest mountains.

Burnet.

John had got an impression that Lewis was so deadly cunning a man that he was afraid to venture himself alone with him ; at last he took heart of grace ; let him come up, quoth he, it is but sticking to my point, and he can never *over-reach* me.

History of J. Bull.

OVERREAD', v. a. Over and read. To peruse.

The contents of this is the return of the duke ; you shall anon *over-read* it at your pleasure.

Shakespeare.

OVER-RED', v. a. Over and red. To smear with red.

Prick thy face and *over-red* thy fear,
Thou lily livered boy. *Shakespeare. Macbeth.*

OVER-RIPEN', v. a. Over and ripen. To make too ripe.

Why droops my lord, like *over-ripened* corn,
Hanging the head with Ceres' pteuous load ?

Shakespeare.

OVERROAST', v. a. Over and roast. To roast too much.

'Twas burnt and dried away,
And better 'twere that both of us did fast,
Since of ourselves, ourselves are choleric,
Than feed it with such *over-roasted* flesh.

Shakespeare.

OVER-RULE', v. a. From over and rule. To influence with predominant power ; to govern ; to supersede : as, in law, to over-rule a plea is to reject it.

What if they be such as will be *over-ruled* with some one, whom they dare not displease ?

Whitgift.

Except our own private, and but probable resolutions, be by the law of publick determinations *over-ruled*, we take away all possibility of sociable life in the world.

Hooker.

Which humour perceiving to *over-rule* me, I strave against it. *Sidney.*

Wherever does he now come forth and openly *over-rule*, as in other matters he is accustomed? *Hayward.*

His passion and animosity *over-ruled* his conscience. *Clarendon.*

A wise man shall *over-rule* his stars, and have a greater influence upon his own content than all the constellations and planets of the firmament. *Taylor.*

Thirty acres make a farthing land, nine farthings a Cornish acre, and four Cornish acres a knight's fee. But this rule is *over-ruled* to a greater or lesser quantity, according to the fruitfulness or barrenness of the soil. *Curew.*

He is acted by a passion which absolutely *over-ruled* him; and so can no more recover himself than a bowl rolling down a hill stop itself in the midst of its career. *South.*

'Tis temerity for men to venture their lives upon unequal encounters; unless where they are obliged by an *over-ruling* impulse of conscience and duty. *L'Estrange.*

A man may, by the influence of an *over-ruling* planet, be inclined to lust, and yet, by the force of reason, overcome that bad influence. *Swift.*

OVERRUN', v. a. Over and run. To harass by incursions; to ravage; to rove over in a hostile manner; to outrun; to overspread; to pester: among printers, to be obliged to change the disposition of the lines and words in correcting, by reason of the insertions.

With an *over-running* flood he will make an utter end of the place. *Nahum i. 8.*

Those barbarous nations that *over-ran* the world, possessed those dominions, whereof they are now so called. *Spenser.*

We may *out-run*

By violent swiftness, that which we run at, And lose by *over-running*. *Shakspeare.*

Till the tears she shed, Like envious floods *o'er-ran* her lovely face, She was the fairest creature in the world. *Id.*

Galileus noteth, that if an open trough, wherein water is, be driven faster than the water can follow, the water gathereth upon a heap towards the hinder end, where the motion began; which he supposeth, holding the motion of the earth to be the cause of the ebbing and flowing of the ocean; because the earth *over-runneeth* the water. *Bacon.*

Pyrocles, being come to sixteen, *over-run* his age in growth, strength, and all things following it, that not Musidorus could perform any action on horse or foot more strongly, or deliver that strength more nimbly, or become the delivery more gracefully, or employ all more virtuously. *Sidney.*

They err, who count it glorious to subdue By conquest far and wide, to *over-run* Large countries, and in field great battles win, Great cities by assault. *Milton's Paradise Lost.*

The nine

Their fainting foes to shameful flight compelled, And with resistless force *o'er-run* the field. *Dryden.*

To flatter foolish men into a hope of life, where there is none, is much the same with betraying people into an opinion that they are in a virtuous and happy state, when they are *over-run* with passion, and drowned in their lusts. *L'Estrange.*

This disposition of the parts of the earth, shews us the foot-steps of some kind of ruin which happened in such a way, that at the same time a general flood of waters would necessarily *over-run* the whole earth. *Burnet.*

Were it not for the incessant labours of this industrious animal, Egypt would be *over-run* with crocodiles. *Addison.*

Gustavus Adolphus could not enter this part of the empire after having *over-run* most of the rest. *Addison.*

Such provision made, that a country should not want springs as were convenient for it; nor be *over-run* with them, and afford little or nothing else; but a supply every way suitable to the necessities of each climate and region of the globe. *Woodward's Natural History.*

A common-wealth may be *over-run* by a powerful neighbour, which may produce bad consequences upon your trade and liberty. *Swift's Miscellanies.*

OVERSEE', v. a. } Over and see. To superintend; to overlook; to omit; or mistake: any superintendant is an overseer.

He had charge my discipline to frame, And tutors nouriture to *oversee*. *Spenser.*

There are in the world certain voluntary *overseers* of all books, whose censure would fall sharp on us. *Hooker.*

A common received error is never utterly *over-thrown*, till such time as we go from signs unto causes, and shew some manifest root or fountain thereof common unto all, whereby it may clearly appear how it hath come to pass that so many have been *overseen*. *Id.*

Such *overseers*, as the *overseers* of this building, would be so *overseen* as to make that which is narrower, contain that which is larger. *Holyday.*

I, who resolve to *oversee*

No lucky opportunity, Will go to council to advise

Which way t' encounter or surprise. *Hudibras.*

They rather observed what he had done and suffered for the king and for his country, without farther enquiring what he had omitted to do, or been *overseen* in doing. *Clarendon.*

The church-wardens and *overseers* of the poor might find it possible to discharge their duties, whereas now in the greater out-parishes many of the poorer parishioners, through neglect, do perish for want of some heedful eye to overlook them. *Graunt.*

She without noise will *oversee* His children and his family. *Dryden.*

To entertain a guest, with what a care Would he his household ornaments prepare; Harass his servants, and as *o'erseer* stand, To keep them working with a threat'ning wand. Clean all my plate, he cries. *Id.*

A reformer of Luther's temper and talents would, in five years, persuade the people to compel the parliament to abolish tithes, to extinguish pluralities, to enforce residence, to confine episcopacy to the *overseeing* of dioceses, to expunge the Athanasian Creed from our Liturgy, to free Dissenters from test acts, and the ministers of the Establishment from subscription to human articles of faith. *Bp. Watson.*

OVERSET', v. a. Over and set. To turn bottom upwards; to throw off the basis; to subvert; to disorder.

The tempests met, The sailors mastered, and the ship *o'er-set*. *Dryden.*

His action against Catiline ruined the consul, when it saved the city; for it so swelled his soul, that ever afterwards it was apt to be *over-set* with vanity. *Id.*

It is forced through the hiatus's at the bottom of the sea with such vehemence, that it puts the sea into

horrible perturbation, even when there is not the least breath of wind; *oversetting* ships in the harbours, and sinking them. *Woodward.*

Would the confederacy exert itself as much to annoy the enemy, as they do for their defence, we might bear them down with the weight of our armies, and *over-set* the whole power of France. *Addison.*

Nature in arms, her elements at strife,
The storms, that *overset* the joys of life,
Are but his rods to scourge a guilty land,
And waste it at the bidding of his hand. *Cowper.*

OVERSHADE', v. a. Over and shade. To cover with any thing that causes darkness.

Dark cloudy death *o'er-shades* his beams of life,
And he nor sees, nor hears us. *Shakespeare.*
No great and mighty subject might eclipse or *over-shade* the imperial power. *Bacon.*

If a wood of leaves *o'ershade* the tree,
In vain the hind shall vex the threshing floor,
For empty chaff and straw will be thy store. *Dryden.*

Should we mix our friendly talk
O'ershaded in that favorite walk;
Both pleased with all we thought we wanted. *Prior.*

OVERSHAD'OW, v. a. Over and shadow. To throw a shadow over any thing; to shelter; to cover with superior influence.

Weeds choke and *over-shadow* the corn, and beat it down, or starve and deprive it of nourishment. *Bacon.*

Death,
Let the damps of thy dull breath
Overshadow even the shade,
And make darkness self afraid. *Crashaw.*
Darkness must *over-shadow* all his bounds,
Palpable darkness, and blot out three days. *Milton.*

On her should come
The holy ghost, and the power of the highest
O'er-shadow her. *Id.*

OVERSHOOT', v. a. & v. n. Over and shoot. To shoot or fly too far; to pass swiftly over; to venture too far; to assert too much.

For any thing that I can learn of them, you have *overshot* yourself in reckoning. *Whitgift.*
In finding fault with the laws, I doubt me, you shall much *overshoot* yourself, and make me the more dislike your other dislikes of that government. *Spenser on Ireland.*

Leave it to themselves to consider, whether they have in this point or not *overshot* themselves; which is quickly done, even when our meaning is most sincere. *Hooker.*

Every inordinate appetite defeats its own satisfaction, by *overshooting* the mark it aims at. *Tillotson.*
Often it drops, or *over-shoots* by the disproportions of distance or application. *Collier on Reason.*

High-raised on fortune's hill, new apples he spies,
O'ershoots the valley which beneath him lies,
Forgets the depths between, and travels with his eyes. *Harte.*

OVERSIGHT, n. s. From over and sight. Superintendence; mistake; error.

They gave the money, being told unto them that had the *over-sight* of the house. *2 Kings xii.*
Feed the flock of God, taking the *over-sight* thereof, not by constraint, but willingly. *1 Peter.*

Amongst so many huge volumes, as the infinite pains of St. Augustine have brought forth, what one hath gotten greater love, commendation, and

honour, than the book wherein he carefully owns his *over-sights* and sincerely condemneth them? *Hooker's Preface.*

They watch their opportunity to take advantage of their adversaries' *over-sight*. *Kettlewell.*

Not so his son, he marked this *over-sight*,
And then mistook reverse of wrong for right. *Pope.*

OVERSIZE', v. a. Over and size. To surpass in bulk: a compost with which masons cover walls; to plaster over.

Those bred in a mountainous country, *over-size* those that dwell on low levels. *Sandy's Journey.*

He, thus *over-siz'd* with coagulate gore,
Old grandsire Priam seeks. *Shakespeare. Hamlet.*

OVERSKIP', v. a. Over and skip. To pass by leaping; to pass over; to escape.

Presume not, ye that are sheep, to make yourselves guides of them that shall guide you; neither seek ye to *over-skip* the fold, which they about you have pitched. *Hooker.*

Mark if to get them she *o'er-skip* the rest,
Mark if she read them twice, or kiss the name. *Donne.*

When that hour *o'er-ships* me in the day,
Wherein I sigh not, Julia, for thy sake;
The next ensuing hour some foul mischance
Torment me.

Shakespeare. Two Gentlemen of Verona.

Who alone suffers, suffers most i' th' mind;
But the mind much sufferance does *o'er-skip*,
When grief hath mates and bearing fellowship *Shakespeare.*

OVERSLIP', v. n. Over and slip. To pass undone, unnoticed, or unused; to neglect.

The carelessness of the justices in imposing this rate, or the negligence of the constables in collecting it, or the backwardness of the inhabitants in paying the same, *over-slipped* the time. *Carew.*

He that bath *over-slipped* such opportunities is to bewail and retrieve them betimes. *Hammond.*

It were injurious to *over-slip* a noble act in the duke during this employment, which I must celebrate above all his expences. *Wotton.*

OVERSNOW', x. a. Over and snow. To cover with snow.

These I wielded while my bloom was warm,
Ere age unstrung my nerves, or time *o'er-snowed* my head. *Dryden's Æneid.*

OVERSOLD', part. From oversell. Sold at too high a price.

Life with ease I can disclaim,
And think it *over-sold* to purchase fame. *Dryden.*

OVERSOON', adv. Over and soon. Too soon.

The lad may prove well enough, if he *over-soon* think not too well of himself, and will bear away that he heareth of his elders. *Sidney.*

OVERSPENT', part. Over and spend. Wearied; harassed; forespent. The verb *overspend* is not used.

Thestylis wild thyme and garlick beats,
For harvest hinds, *o'er-spent* with toil and heats. *Dryden.*

OVERSPREAD', v. a. Over and spread. To cover over; to fill; to scatter over.

Of the three sons of Noah was the whole earth *overspread*. *Genesis ix. 19.*

Whether they were Spaniards, Gauls, Africans, Goths, or some other which did *overspread* all Christendom, it is impossible to affirm. *Spenser.*

Darkness Europe's face did *overspread*,
From lazy cells, where superstition bred.

Denham.

Not a deluge that only over-run some particular
region; but that *overspread* the face of the whole
earth from pole to pole, and from east to west.

Burnet.

OVERSTAND', v. a. Over and stand. To
stand too much upon conditions.

Her's they shall be, since you refuse the price,
What madman would *o'er-stand* his market twice.

Dryden.

OVERSTARE', v. a. Over and stare. To
stare wildly.

Some warlike sign must be used; either a slo-
venly buskin, or an *over-staring* frowned head.

Ascham.

OVERSTOCK', v. a. Over and stock. To
fill too full; to crowd.

Had the world been eternal, it must long ere this
have been *over-stocked*, and become too narrow for
the inhabitants.

Wilkins.

If rallery had entered the old Roman coins, we
should have been *over-stocked* with medals of this
nature.

Addison.

Since we are so bent upon enlarging our flocks, it
may be worth enquiring what we shall do with our
wool, in case Barnstable should be ever *over-stocked*.

Swift.

OVERSTORE', v. a. Over and store. To
store with too much.

Fishes are more numerous than beasts or birds,
as appears by their numerous spawn; and, if all
these should come to maturity, even the ocean itself
would have been long since *over-stored* with fish.

Hale.

OVERSTRAIN', v. n. Over and strain. To
make too violent efforts.

He wished all painters would imprint this lesson
deeply in their memory, that with *over-straining* and
earnestness of finishing their pieces, they often did
them more harm than good.

Dryden's DuFrenoy.

Crassus lost himself, his equipage, and his army,
by *over-straining* for the Parthian gold.

Collier.

OVERSTRA'IN, v. a. To stretch too far.

Confessors were apt to *over-strain* their privileges,
in which St. Cyprian made a notable stand against
them.

Ayliffe.

OVERSWAY', v. a. Over and sway. To
over-rule; to bear down.

When they are the major part of a general as-
sembly, then their voices, being more in number,
must *over-sway* their judgments who are fewer.

Hooker.

Great command *o'er-sways* our order.

Shakspeare.

Some great and powerful nations *o'er-sway* the
rest.

Heylyn.

OVERSWELL', v. a. Over and swell. To
rise above.

Fill, Lucius; till the wine *o'er-swell* the cup.
I cannot drink too much of Brutus' love.

Shakspeare.

When his banks the prince of rivers, Po,
Doth *o'er-swell*, he breaks with hideous fall.

Fairfax.

OVERT, adj. Fr. *ouvert*. Open; public;
apparent.

To vouch this, is no proof,
Without more certain and more *overt* test,
Than these thin habits and poor likelihoods.

Shakspeare.

Overt and apparent virtues bring forth praise
but there be secret and hidden virtues that bring
forth fortune; certain deliveries of a man's self.

Bacon.

My repulse at Hull was the first *overt* essay to be
made how patiently I could bear the loss of my king-
doms.

King Charles.

The design of their destruction may have been
projected in the dark; but, when all was ripe, their
enemies proceeded to so many *overt* acts in the face
of the nation, that it was obvious to the meanest.

Swift.

Whereas human laws can reach no farther than to
restrain the *overt* action, religion extends to the mo-
tions of the soul.

Rogers.

OVERTAKE', v. a. From over and take. To
catch any thing by pursuit; to come up to some-
thing going before; to take by surprise.

The enemy said, I will pursue, I will *overtake*, I
will divide the spoil.

Exodus xv. 9.

If a man be *over-taken* in a fault, ye which are
spiritual restore such an one in the spirit of meek-
ness.

Galatians vi. 1.

We durst not continue longer so near her con-
fines, lest her plagues might suddenly *overtake* us
before we did cease to be partakers with her sins.

Hooker.

If I had given you this at over night,
She might have been *o'ertaken*; and yet she writes
Pursuit would be but vain.

Shakspeare.

My soul, more earnestly released,
Will out-strip hers; as bullets flown before
A latter bullet may *o'er-take*, the powder being more.

Donne.

To thy wishes move a speedy pace,
Or death will soon *o'er-take* thee in the chase.

Dryden.

How must he tremble for fear vengeance should
over-take him, before he has made his peace with
God!

Rogers.

If it fall out, that through infirmity we be *over-
taken* by any temptation, we must labour to rise
again, and turn from our sin to God by new and
speedy repentance.

Perkins.

OVERTASK', v. a. Over and task. To
burden with too heavy duties or injunctions.

That office is performed by the parts with difficulty
because they were *overtasked*.

Harvey.

OVERTAX', v. a. Over and tax. To tax too
heavily.

OVERTHROW', v. a. & n. s. Over and
throw. To turn up side down; to throw down;
to demolish; to conquer, destroy, or subvert:
the noun follows these significations.

God *overthroweth* the wicked for their wickedness.

Proverbs.

Thou walkest in peril of thy *overthrowing*.

Eccles. xiii. 13.

Our endeavour is not so much to *overthrow* them
with whom we contend, as to yield them reasonable
causes.

Hooker.

Of those christian oratories, the *overthrow* and
ruin is desired, not by infidels, pagans, or Turks, but
by a special refined sect of Christian believers.

Id.

Here Glo'ster

O'er-charging you free purses with large fines,
That seeks to *overthrow* religion.

Shakspeare.

His *overthrow* heaped happiness upon him;
For then, and not till then, he felt himself,
And found the blessedness of being little.

Id.

From without came to mine eyes the blow,
Whereto mine inward thoughts did faintly yield;

Both these conspired poor reason's *overthrow*;
False in myself thus have I lost the field. *Sidney.*

She found means to have us accused to the king,
as though we went about some practise to *overthrow*
him in his own estate. *Id.*

They return again into Florida, to the murder
and *overthrow* of their own countrymen. *Abbott.*

From these divers Scots feared more harm by vic-
tory than they found among their enemies by their
overthrow. *Hayward.*

The *overthrown* he raised, and as a herd
Drove them before him. *Milton.*

O loss of one in heaven, to judge of wise
Since Satan fell, whom folly *overthrew.* *Id.*

Pittacus was a wise and valiant man, but his wife
overthrew the table when he had invited his friends.
Taylor.

To Sujah next your conquering army drew,
Him they surprised, and easilly *o'erthrew.* *Dryden.*

Poor Hannibal is maul'd,
The theme is given, and strait the council's called,
Whether he should to Rome directly go,
To reap the fruit of the fire *overthrow.* *Id.*

Blood is not water; and where shall we find
Feelings of youth like those which *overthrown* lie
By death, when we are left, alas! behind. *Byron.*

OVERTHWART, *adj.* } Over and thwart.
OVERTHWARTLY, *adv.* } Opposite; being
over against: in the adverb transversely; hence
perversely.

Two or three acts disposed them to cross and op-
pose any proposition; and that *over-thwart* humour
was discovered to rule in the breasts of many.
Clarendon.

We whisper, for fear our *overthwart* neighbours
should bear us, and betray us to the government.
Dryden.

The brawn of the thigh shall appear, by drawing
small hair strokes from the hip to the knee shadowed
again *over-thwart.* *Peachment on Drawing.*

OVERTOP, *v. a.* Over and top. To rise
above: to raise the head above; to excel; to
surpass; obscure, or make of less importance by
superior excellence.

Who ever yet
Have stood to charity and displayed the effects
Of disposition gentle, and of wisdom
er-topping woman's power?

Shakespeare. Henry VIII.

Pile your dust upon the quick and dead,
T' *er-top* old Pelion, or the skyish head
Of blue Olympus. *Id. Hamlet.*

Whereas he had been heretofore an arbiter of Eu-
rope, he should now grow less, and be *overtopped* by
so great a conjunction. *Bacon.*

As far as the soul *er-tops* the body, so far its
pains, or rather mournful sensations, exceed those
of the carcass. *Harvey.*

In the dance the graceful goddess leads
The quire of nymphs and *over-tops* their heads.
Dryden.

One whom you love,
Had champion killed, or trophy won,
Rather than thus be *overtop*,
Would you not wish his laurels cropt? *Swift.*

OVERTRIP, *v. a.* Over and trip. To trip
over; to walk lightly over.

In such a night.
Did Thisbe fearfully *o'ertrip* the dew,
And saw the lion's shadow ere himself,
And ran dismayed away.

Shakespeare. Merchant of Venice.

OVERTURE, *n. s.* *Fr. ouverture.* Opening;
disclosure; discovery; proposal; offer.

I wish
You had only in your silent judgment try'd it,
Without more *overture.* *Shakespeare. Winter's Tale.*
Mac Murugh moved Henry to invade Ireland, and
made an *overture* unto him for obtaining of the sove-
reign lordship thereof. *Davies on Ireland.*

All these fair *overtures* made by men well es-
teemed for honest dealing could not take place.
Hayward.

We with open breast
Stand ready to receive them, if they like
Our *overture*, and turn not back perverse.

Milton.
Withstand the *overtures* of ill, and be intent and
serious in good. *Fell.*

The earl of Pembroke, who abhorred the war,
promoted all *overtures* towards accommodation with
great importunity. *Clarendon.*

If a convenient supply offers itself to be seized
by force or gained by fraud, human nature per-
suades us to hearken to the inviting *overture.*

Rogers.
Suppose five hundred men proposing, debating,
and voting according to their own little or much
reason, abundance of indigested, and abortive,
many pernicious and foolish *overtures* would arise.
Swift.

OVERTURN, *v. a.* Over and turn. To
throw down; to topple down; to subvert; to
ruin: an overturner, one who subverts.

He is wise in heart and mighty in strength—which
removeth the mountains, and *over-turneth* them in his
anger. *Job.*

These will sometimes *over-turn*, and sometimes
swallow up towns, and make a general confusion in
nature. *Burnet.*

This he obviates, by saying we see all the ideas in
God; which is an answer to this objection, but such
an one as *overturns* his whole hypothesis, and renders
it useless and as unintelligible, as any of those
he has laid aside. *Locke.*

But he comes round about again, and *overturns*
every stone that he had laid. *Lesley.*

If we will not encourage publick works of benefi-
cence, till we are secure that no storm shall *over-
turn* what we help to build; there is no room left
for charity. *Atterbury.*

A monument of deathless fame,

A woman's hand *overturns.*

Rousseau.
I have brought before you a robber of the publick
treasure, an *overturner* of law and justice, and the
destruction of the Sicilian province. *Swift.*

OVERVAL'UE, *v. a.* Over and value. To
rate at too high a price.

We have just cease to stand in some fear, lest by
thus *over-valuing* their sermons they make the price
and estimation of scripture, otherwise notified, to fall.

Hooker.
To *over-value* human power is likewise an argu-
ment of human weakness. *Holyday.*

OVERVEIL, *v. a.* Over and veil. To
cover.

The day begins to break, and night is fled;
Whose pitchy mantle *over-veiled* the earth.

Shakespeare.

OVERVOTE, *v. a.* Over and vote. To con-
quer by plurality of votes.

The lords and commons might be content to be
over-voted by the major part of both houses, when
they had used each their own freedom.

King Charles. I.

OVERWATCH', v. n. Over and watch. To subdue with long want of rest.

While the dog hunted in the river, he had withdrawn himself to pacify with sleep his *over-watched* eyes. *Sidney.*

Morpheus is dispatched ;
Which done, the lazy monarch *over-watched*,
Down from his popping elbow drops his head,
Dissolved in sleep, and shrinks within his bed.

Dryden.

OVERWEAK', adj. Over and weak. Too weak ; too feeble.

Paternal persuasions, after mankind began to forget the original giver of life, became in all *over-weak* to resist the first inclination of evil ; or after, when it became habitual, to constrain it. *Kaleigh.*

OVERWEARY, v. a. Over and weary. To subdue with fatigue.

Might not Palinurus fall asleep and drop into the sea, having been *over-wearied* with watching ?

Dryden.

OVERWEATHER, v. a. Over and weather. To batter by violence of weather.

How like a younker or a prodigal,
The skarfed bark puts from her native bay,
Hugged and embraced by the strumpet wind !
How like the prodigal does she return,
With *over-weathered* ribs, and ragged sails,
Lean, rent, and beggar'd by the strumpet wind !

Shakespeare.

OVERWEEN', v. n. Over and ween. To think too highly ; to think with arrogance.

Oft have I seen a hot *o'erweening* cur,
Run back and bite, because he was with-held.

Shakespeare.

My eye's too quick, my heart *o'erweens* too much,
Unless my hand and strength could equal them.

Id.

Take heed of *overweening*, and compare
Thy peacock's feet with thy gay peacock's train ;
Study the best and highest things that are,
But of thyself an humble thought retain. *Davies.*

They that *overween*,
And at thy growing virtues fret their spleen,
No anger find in thee. *Milton.*

Satan might have learnt
Less *overweening*, since he failed in Job,
Whose constant perseverance overcame
Whate'er his cruel malice could invent. *Id.*

No man is so bold, rash, and *overweening* of his own works, as an ill painter and a bad poet.

Dryden.

Men of fair minds, and not given up to the *overweening* of self-flattery, are frequently guilty of it : and, in many cases, one with amazement hears the arguings, and is astonished at the obstinacy, of a worthy man who yields not to the evidence of reason.

Locke.

Now enters *overweening* pride,
And scandal ever gaping wide. *Swift.*

OVERWEIGH', v. a. Over and weigh. To preponderate.

Sharp and subtle discourses of wit, procure many times very great applause, but, being laid in the balance with that which the habit of sound experience delivereth, they are *overweighed*. *Hooker.*

My unsoiled name, the' austereness of my life,
Will so your accusation *overweigh*,
That you shall stifle in your own report.

Shakespeare.

OVERWEIGHT', n. s. Over and weight. Preponderance.

Sinking into the water is but an *overweight* of the body, in respect of the water.

Bacon's Natural History.

OVERWHELM', v. a. } To crush under-
OVERWHELMINGLY, adv. } neath something ; violent or weighty ; to overlook gloomily : the adverb signifies irresistibly.

Back do I toss these treasons to thy head,
With the hell hated lie *o'erwhelm* thy heart.

Shakespeare.

Let the brow *o'erwhelm* it,
As fearfully as doth a galled rock
O'erhang and jutty his confounded base. *Id.*

An apothecary late I noted,
In tattered weeds with *overwhelming* brows,
Culling of simples. *Id. Romeo and Juliet.*

What age is this, where honest men,
Placed at the helm,

A sea of some foul mouth or pen,
Shall *overwhelm* ? *Ben Jonson.*

Men should not tolerate themselves one minute in any known sin, nor impertinently betray their souls to ruin for that which they call light and trivial ; which is so indeed in respect of the acquiescent, but *overwhelmingly* ponderous in regard of the pernicious consequents. *Decay of Piety.*

How trifling an apprehension is the shame of being laughed at by fools, when compared with that everlasting shame and astonishment which shall *overwhelm* the sinner, when he shall appear before the tribunal of Christ ! *Rogers.*

Blind they rejoice, though now, even now they fall ;

Death hastes amain ; one hour *o'erwhelms* them all.

Pope.

OVERWISE', adj. Over and wise. Wise to affectation.

Make not thyself *overwise*. *Ecc. vii. 16.*

OVERWROUGHT', part. Over and wrought. Labored too much ; worked all over.

Apelles said of Protegenes, that he knew not when to give over. A work may be *overwrought*, as well as underwrought : too much labour often takes away the spirit, by adding to the polishing ; so that there remains nothing but a dull correctness, a piece without any considerable faults, but with few beauties. *Dryden.*

Of Gothic structure was the northern side,
O'erwrought with ornaments of barbarous pride.

Pope.

OVERWORN', part. Over and worn. Worn out ; subdued by toil ; spoiled by time.

The jealous *o'erworn* widow and herself
Are mighty gossips in this monarchy.

Shakespeare.

With watching *overworn*, with cares oppress,
Unhappy I had laid me down to rest. *Dryden.*

OVERYEARED', adj. Over and year. Too old.

Among them dwelt
A maid, whose fruit was ripe, not *overyeared*.

Fairfax.

OVERYSSEL, a large level province of the Netherlands, having Guelderland on the south-west, and on the east a part of Hanover and Westphalia. It contains large tracts of marshy ground, and the soil is consequently ill fitted for tillage, except along the banks of the Yssel. It is watered by this river, the Vechte, the Zwart water, the Schiepel, and the Linde. The air is damp and in various parts unhealthy, from the exhalations that rise from the large expanses of

water. It produces buck-wheat, potatoes, a little fruit, rape seed; timber; cattle, and sheep. Turf for fuel is found in almost all parts. The chief exports, after cattle, are butter, cheese, tallow, hides, wool, turf, and linen, which is made and bleached in considerable quantities. This is the least populous of the Dutch provinces; its inhabitants amounting only to 147,000, partly Protestants, and partly Catholics. It has no port of consequence; but sends four members to the states-general of the Netherlands; belonging to the second military division, and to the jurisdiction of the high court of the Hague. It is divided into three districts, viz. Zwolle (the capital) in the north-west, Deventer in the south-west, and Almelo in the east.

OVERZEAL'OUS, *adj.* Over and zealous. Too zealous.

It is not of such weighty necessity to determine one way or the other, as some *overzealous* for or against the immateriality of the soul, have been forward to make the world believe. *Locke.*

OUESSENT, ISLE OF, France, situated in the Atlantic Ocean, about eighteen miles from the coast of Brittany, and thirty-six W. N. W. from Brest, which is its port town. It constitutes one of the cantons of the arrondissement of Brest, in the department of Finistère; but it is of small extent, not containing more than eighteen square miles. The soil is rather fertile, and covered in some parts with fine meadows, feeding a great number of horses and sheep. This island contains a few hamlets, a strong castle, and a little port frequented by fishermen. The access to it is very dangerous on account of the rocks which surround it. There are some other smaller islands near it, called by the same name. On the coast there is a fishery for pilchards and other fish.

OUFÁ, a large city of Asiatic Russia, the capital of the government of Orenbourg, was built in 1573, by the czar Ivan Vassilievitch. It is said that there was anciently upon this spot a great Tartar city, the residence of the khans of Nogais; and two mosques of brick, and several remarkable sepulchral monuments, which bear Arabic and Cufic inscriptions, would seem to confirm this tradition. The town is situated on the Belaia, near its junction with the Oufa. Its site is intersected by numerous torrents and ravines. Oufa was once fortified, but the frontier being now extended, the works have fallen into decay. It has seven churches, two convents (one for nuns), an academy, and two schools. It is also the residence of a primate, who bears the title of archbishop of Orenbourg and Oufa. Inhabitants 2500.

OUFA, a considerable river of Asiatic Russia, which rises in the Oural mountains, and flows through a mountainous country, till it falls into the Belaia, near the city of this name. Several of its tributary streams have rich mines of iron on their banks.

UGHT, *n. s.* } Sax. *aphit*. More properly
UGH'TY. } written *ught*. Any thing.

He asked him if he saw *ught*. *Mark*, viii. 23.

For *ought* that I can understand, there is no part but the bare English pale, in which the Irish have not the greatest footing. *Spenser on Ireland.*

To do *ought* good never will be our task;
But ever to do ill our sole delight. *Milton.*

Universal Lord! be bounteous still
To give us only good; and if the night
Have gathered *ought* of evil, or concealed,
Disperse it, as now light dispels the dark. *Id.*

UGHT, *imp. verb. & preter. of owe.* Owed; obliged; to be fit or necessary.

Know how thou *oughtest* to behave. *Timothy.*
Speak boldly as I *ought* to speak. *Ephesians.*

Judges *ought* to remember that their office is to interpret law, and not to make or give law. *Bacon.*

Apprehending the occasion, I will add a continuance to that happy motion, and besides give you some tribute of the love and duty I long have *ought* you. *Spelman.*

This blood which men by treason sought,
That followed, sir, which to myself I *ought*

If grammar *ought* to be taught, it must be to one that can speak the language already. *Locke.*

We *ought* to profess our dependance upon him, and our obligations to him for the good things we enjoy. We *ought* to publish to the world our sense of his goodness with the voice of praise, and tell of all his wondrous works. We *ought* to comfort his servants and children in their afflictions, and relieve his poor distressed members in their manifold necessities; for he that giveth alms sacrificeth praise. *Nelson.*

She acts just as she *ought*,
But never, never, reached one gen'rous thought. *Pope.*

But Reason still, unless divinely taught,
Whate'er she learns, learns nothing as she *ought*. *Cowper.*

Whate'er thou takest, spare awhile poor Beauty!
She is so rare, and thou hast so much prey.

What though she now and then may slip from duty,
The more's the reason why you *ought* to stay. *Byron.*

UGHTRED (William), an eminent mathematician, born and educated at Eton, in 1573, whence he was sent to King's College in Cambridge, of which he afterwards became fellow. Being admitted to holy orders, he left the university about 1603, and was presented to the rectory of Aldbury, near Guildford in Surrey; and about 1628 was appointed by the earl of Arundel to instruct his son in the mathematics. He corresponded with some of the most eminent scholars of his time upon mathematical subjects; and young gentlemen came from all parts to receive his instructions. Upon hearing the news of the vote at Westminster, for the restoration of king Charles II., he expired in a sudden transport of joy, aged eighty-eight. He wrote, 1. *Clavis Mathematica*; afterwards published in English. 2. *A Description of the double horizontal Dial*. 3. *Opuscula Mathematica*; and several other works. He left also behind him a great number of papers upon mathematical subjects, in the museum of William Jones, esq., F. R. S. He had one son, whom he bred a watchmaker.

OVID, a post town, the capital of Seneca county, New York; twenty miles south by east of Geneva, forty-one north of Elmira, 205 west of Albany. Population 4535. It is situated between Seneca and Cayuga lakes, is a large and excellent agricultural town, and contains four houses of public worship. The county buildings

are in a small village called Verona, or Ovid. A weekly newspaper is published here.

VIDIUS NASO (Publius), a celebrated Latin poet of the Augustan age, and a Roman knight, born at Sulmo, A. A. C. 43. He studied rhetoric under Aurelius Fuscus, and for some time frequented the bar. His progress in eloquence was great, but nothing could deter him from pursuing his natural inclination to poetry. Every thing he wrote was expressed in poetical numbers. A lively genius and a fertile imagination soon gained him admirers: the learned became his friends; Virgil, Propertius, Tibullus, and Horace, honored him with their correspondence, and Augustus patronised him with the most unbounded liberality. However, he afterwards incurred his displeasure, and was banished to Tomos, a city on the Pontus Euxinus, near the mouth of the Danube, when he was fifty years of age. The cause of this exile is unknown, but several passages indicate that it was some improper connexion with the family of Augustus. His writings in exile, although full of flattery and impatience, failed to procure him a pardon, and he died in the seventh or eighth year of his banishment, and in the fifty-seventh year of his age. He was buried at Tomos. The greatest part of his poems are extant, consisting of his *Metamorphoses*, his *Fasti*, his *Tristia*, *Elegies*, the *Heroides*, three books *Amorum*, and three *de Arte Amandi*, with the other *de Remedio Amoris*, his *Ibis*, and fragments of other poems, among which are part of a tragedy called *Medea*. His *Epistles* from Pontus are the language of a servile flatterer.

OVIEDA, in botany, a genus of the angiospermia order, and didynamia class of plants; natural order fortieth, personatæ: CAL. quinquefid: cor. tube almost cylindrical above, and very long: BERRY globose and dispersuous.

OVIEDO (John Gonsalvez de), born at Madrid about 1478, was sent by Ferdinand V. to the island of Hayti (now St. Domingo), as intendant and inspector-general of the trade of the New World, and on his return to Spain published *Summario de la Historia general y natural de las Indias Occidentales*.

OVIEDO, an inland town of Spain, the chief place of Asturias, stands in a plain at the confluence of two small rivers called the Ovia and the Nora. It is of a horse-shoe form, with a square in the centre. The streets are straight and regular; and the town a bishop's see, and has an elegant Gothic cathedral, rich in vases, relics, and ornaments. It contains the bones of fourteen kings and queens who reigned in the north of Spain while the rest of the peninsula was in the hands of the Moors. Another church called St. Salvador was built in the eighth century. In the ninth century Oviedo had the title of the City of Bishops, from the great number of prelates who took refuge here from the Saracens. In 877 a general council was held here. The other public establishments are a university, an ancient aqueduct, the episcopal palace, a collegiate chapter, three churches, three monasteries, three convents, three hospitals, and a drawing school. The trade is, or was, chiefly in the colonial produce landed at Gijon. Here are also tanneries;

manufactories of hats, combs, and bone buttons; with a depôt of arms. Population 7500. Sixty miles north of Leon, and 130 W.N.W. of Burgos.

O'VIFORM *adj.* } Lat. *ovum*. Of the shape
OVI'FEROUS. } of an egg: bringing forth eggs.

This notion of the mundane egg, or that the world was *oviform*, hath been the sense and language of all antiquity. *Burnet.*

Birds and *oviparous* creatures have eggs enough at first conceived in them to serve them for many years' laying. *Ray.*

That fishes and birds should be *oviparous* is a plain sign of providence.

More's Antidote against Atheism.

OVILIA, or Septa, a place in ancient Rome, in the Campus Martius, at first railed in like a sheep-pen, whence its name. Afterwards it was mounted with marble, and beautified with walks and galleries, as also with a tribunal, or a seat of justice. Within this precinct, or enclosure, the people were called to give their suffrages for the election of magistrates. The ascent into the ovilia was not by stairs, but by pontes, or narrow boards, laid there for the occasion; on which account, *de ponte de jeci* signified 'to be deprived of the privilege of voting;' and persons thus dealt with were called *de pontani*.

OVIS, the sheep, in zoology, a genus of the class mammalia, and of the order of pecora. The characters are these: the horns are concave, turned backwards, and full of wrinkles; there are eight fore-teeth in the under jaw, and no dog-teeth. The wool of these animals is only a congeries of very long and slender hairs twisted and contorted, and variously interwoven with one another. This, as far as is yet known, is a clothing peculiar to the sheep kind, no other animal having been seen to possess it. It is not, however, the clothing of all the species of sheep, some that are found in distant nations having short hair like that of the goat. Linné enumerates three species, viz.—

1. O. aries, or the ram-sheep, the horns of which are shaped like a half-moon, and compressed.

2. O. Guineensis, the Guinea sheep, which has pendulous ears, lax hairy dewlaps, and a prominence on the hind part of the head. The wool is short like that of a goat. It is a native of Guinea.

3. O. strepsiceros, or the Cretan sheep, which has straight cariated horns, twisted in a spiral manner, and is a native of Mount Ioha.

Pallas, in his very extensive travels in the Russian empire, more particularly in Siberia and amongst the pastoral nations of Great Tartary, found what he regards as only one species of sheep, subdivided into four varieties.

i. O. brachiura, the short-tailed sheep, is called the Russian sheep by the natives. It seems to be the *ovis Islandicus* of authors, with smaller horns. It is reared throughout all the north of Russia, and resembles that of Iceland in size, tail, and coarseness of fleece; but, though this be the case in these few respects, yet it differs from it in a very essential character, that of horns, which are much smaller, and have nothing

of that exuberance which Buffon and others attribute to the sheep of that island. It resembles the Tscherkessian sheep in the form of its head, straight upright ears, and in thickness of fleece; but the quality of the two fleeces is very different, this variety having wool almost as coarse as dog's hair; but the great distinguishing character between them is the tail, which is almost a quarter of a yard shorter than that of the Tscherkessian. The brachiura, or short-tailed sheep, is reared not only by the northern Russians, but likewise by the Fins and other neighbouring nations. Some of this variety have been transported into Siberia, where they have supported themselves on some pastures, though in poor condition; but through all the southern countries they are in less estimation than the long-tailed and fat-tailed varieties, which are much superior to them for size, fat, and good eating.

ii. *O. Bucharica* is by Pallas called Bucharian, from his finding it reared by the Bucharian Tartars in immense flocks. It is also raised by the Persians in great numbers. Pallas regards this as a mixed breed, arising, as he supposes, from the union of the long-tailed and fat-tailed sheep. The head of this variety is like that of the Kirguise; but the muzzle is sharper, resembling the Indian of Buffon: the body is rather smaller than that of the Kirguise sheep; the ears are larger and pendant; they have a small uropygium, like that of the Tartar sheep on the Jenisy, especially when begotten by a Kirguise ram; but in general they have a tail fat and broad at the base, with a long narrow appendage, and resembles the tail of the Tscherkessian sheep.

iii. *O. dolichura*, the long-tailed sheep, is named both by the Tartars and Russians Tscherkessian sheep; it is the *ovis longicauda* of authors. It is a handsome animal, with a noble air, in its native country and the south of Russia, resembling in its habits, horns, fleece, and length of tail, the Spanish, but more particularly the English sheep. Its head is well proportioned, and of an elegant form; ears straight; horns large, even, rounded in the angles, tapering to a point, and bending inwardly towards the back. The rams are seldom without horns, and the ewes have them often bent in a lunar form. The wool, though coarse, is without admixture of hair, which is perhaps but an accidental distinction, and promises to be much meliorated by crossing the breed, and rearing the animal with more care and skill. It is even known to become much finer without the assistance of art, merely from the influence of a temperate climate, as on Mount Caucasus. The tail of the ram is covered with fine long wool, like the Indian sheep described by Buffon, which trails on the ground, so as to efface the prints made by the animal's feet on sand, and it contains often twenty joints or vertebrae. In passing from the state of nature to that of servitude, it seems to have lost its native ferocity, together with its coarse fleece. There are sheep in Morocco which belong to this variety, on account of the distinguishing character of it, a long tail, although otherwise different, in having an ugly look, head covered entirely with hair, little hanging ears, and remarkably long wool.

iv. *O. steatopyga*, the fat-tailed sheep, has appellations as various as the provinces where it is reared; it is the *ovis laticaudata* of authors. This is both the most abundant and largest breed of sheep in the world. It is reared throughout all the temperate regions of Asia, from the frontiers of Europe to those of China, in the vast plains of Tartary. All the Nomade hordes of Asia, the Turkomans, Kirguise, Calmucks, and Mongul Tartars, rear it; and, indeed, it constitutes their chief riches, the number they possess being enormous. The flocks of all the Tartar hordes resemble one another by a large yellowish muzzle, the upper jaw often projecting beyond the lower; by long hanging ears; by the horns of the adult ram being large, spiral, wrinkled, angular, and bent in a lunar form. The body of the ram, and sometimes of the ewe, swells gradually with fat towards the posteriors; where a solid mass of fat is formed on the rump, and falls over the anus in place of a tail, divided into two hemispheres, which take the form of the hips, with a little button of a tail in the middle, to be felt with the finger. The uropygium, or fat-rump, which is made up of this oily species of fat, is so very large as to incommode the animal in walking; but, when the same sheep are carried into the interior parts of Russia, the tail loses half its size and weight; nay, sometimes more, from a change in their food and mode of life. This variety, besides the characters mentioned above, have slender legs in proportion to their bodies, a high chest, large hanging testicles, a large prepuce, and tolerably fine wool mixed with hair. Such are the great characteristic marks by which the flocks of all the Tartar hordes resemble one another; but climate, soil, &c., produce some small difference on this variety, whether reared by the Tartars or the Russians, in the western deserts of Great Tartary, from the river Volga to the Irtysh, and the Altaic chain of mountains.

Mr. Kerr, in his translation of Gmelin's Zoological System of Linné, gives a more complete and satisfactory classification of this genus than any of the authors above quoted. He enumerates four species and fifteen varieties, viz.—

i. *O. ammon*, the argali, or *O. fera* of Pallas; or the wild sheep of Pennant. The horns are large, semicircularly arched backwards and divergent, wrinkled on their upper surface, and flatish on the under side; the neck has two pendent hairy wattles. Pallas paid particular attention to this species. He says, he 'found the *ovis fera*, or wild sheep, in all its native vigor, boldness, and activity, inhabiting the vast chain of mountains which run through the centre of Asia to the eastern Sea, and the branches which it sends off to Great Tartary, China, and the Indies. This wild animal, probably the musimon of Pliny, and the ophion of the Greeks, is called argali, or wild sheep, by the Siberians; and by the Russians *kamennoi barrann*, or sheep of the rocks, from its ordinary place of abode. It delights in the bare rocks of the Asiatic chain just mentioned, where it is constantly found basking in the sun; but it avoids the woods or the mountains, and every other object that would intercept the direct rays of the glorious luminary. Its food is the Alpine plants and shrubs it finds

amongst the rocks. The argali prefers a temperate climate, although he does not disdain that of Asiatic Siberia, as there he finds his favorite bare rocks, sunshine, and Alpine plants; nay, he is even found in the cold eastern extremity of Siberia and Kamtschatka. The argali loves solitude, and flees the haunts of man; gradually abandoning a country in proportion as it becomes peopled. The ewe of the argali brings forth before the melting of the snow. Her lamb resembles much a young kid, except that it has a large flat protuberance in place of horns, and that it is covered with a woolly hair, frizzled, and of a dark gray. When pursued, the argali does not run straight forward, but doubles and turns like a hare, at the same time that it scrambles up and over the rocks with wonderful agility. In the same proportion that the adult argali is wild and untameable, the lamb is easily tamed when taken young, and fed first on milk and afterwards on fodder, like the domestic sheep, as has been found on numerous experiments made in the Russian settlements in these parts. This animal formerly frequented the regions about the upper Irish, and some other parts of Siberia, where it is no longer seen since colonies have been settled in these countries. It is common in the Mongolian, Songarian, and Tartarian mountains, where it enjoys its favorite solitude and liberty. The argali is found likewise on the banks of the Lena, up as high as 60° of lat. N.; and it propagates its species even in Kamtschatka, as noticed before. The argali is also found in the mountains of Persia, and is said to exist in the Kuril islands in great size and beauty. The argali is about the height of a small hart, but its make is much more robust and nervous. Its form is less elegant than that of the deer, and its legs and neck shorter. The male is larger than the female, and every way stouter. Its head resembles that of a ram, with long straggling hairs about the mouth; but no beard. Its ears are rather smaller than those of a ram. The tail is very short. The summer coat consists of short hair, sleek, and resembling that of a deer. The winter coat consists of wool like down, mixed with hair every where an inch and a half long at least, concealing at its roots a fine woolly down, generally of a white color. The color of its coat was in general of a dark grayish brown, with white tips to the longer hairs, and consisted of hair mixed with wool, of a dark iron gray.

ii. *O. Ammon Europæa*, the Corsican argali, is a variety mentioned by Mr. Kerr on the authority of Mr. Pennant, differing from the above chiefly in color; having a large white spot on the neck, and being black on the shoulders. In Corsica it is called *mufro*.

iii. *O. aries*, the common sheep, has the horns spirally twisted outwards. The disposition of the sheep is so mild and gentle, that, although in its wild state, it fears not to defend itself against the most formidable antagonists; yet, when domestic, it is the most timid and apparently defenceless of all animals. It is of the most extensive utility to man. We are clothed by its fleece, and the flesh is a delicate and wholesome food. The skin, dressed, forms different parts of our apparel, and is used for covers of books.

The entrails, properly prepared and twisted, serve for strings for various musical instruments. The milk is thicker than that of cows, and consequently yields a greater quantity of butter and cheese; and in some places is so rich that it will not produce the cheese without a mixture of water to make it part from the whey. The dung is a remarkably rich manure; inasmuch that the folding of sheep is become too useful a branch of husbandry for the farmer to neglect. In short, this animal has nothing that does not redound to our benefit. The ram is capable of generation at the age of eighteen months; and the ewe can be impregnated when a year o.d. One ram is sufficient, according to Buffon, for twenty-five or thirty ewes; they have often been known indeed to beget 100 lambs in a single season. He ought to be large and well proportioned; his head should be thick and strong, his front wide, his eyes black, his nose flat, his neck thick, his body long and tall, his testicles massy, and his tail long. White is the best color for a ram. The ewes whose wool is most plentiful, bushy, long, soft, and white, are most proper for breeders, especially when at the same time they are of a large size, have a thick neck, and move nimbly. In this climate, ewes fed in good pastures admit the ram in July or August; but September or October are the months when the greatest part of our ewes, if left to nature, take the ram. They go with young about five months, and generally bring forth but one at a time, though frequently two; in warm climates they may bring forth twice in a year; but in Britain, France, and most parts of Europe, only once. They give milk plentifully for seven or eight months. They live from ten to twelve years; they are capable of bringing forth as long as they live, when properly managed; but are generally old and useless at the age of seven or eight years. The ram, though he lives twelve or fourteen years, becomes unfit for propagating when eight years old. When the male lambs are not intended to be kept for propagation, but fattened for food, they ought to be castrated at the age of five or six months. After castration they are called *wedders*. The ram, ewe, and *wedder*, when one year old, lose the two fore teeth of the under jaw; six months afterwards they lose the two fore teeth next to these; and, at the age of three years, the teeth are all replaced. The age of a ram may likewise be discovered by his horns, which always appear the first year, and frequently as soon as he is brought forth. These horns uniformly acquire an additional ring every year as long as the creature lives. The ewes commonly have no horns, but a kind of long protuberance in place of them; however some of them have two and some four horns. As white wool is most valued, black or spotted lambs are generally slaughtered. In some places, however, almost all the sheep are black; and black lambs are often produced by the commixture of white rams with white ewes. In France there are only white, brown, black, and spotted sheep; but in Spain there is a reddish kind; and in Scotland there are some of a yellowish color. But all these varieties of color are more accidental than those produced by dif-

ferent races ; which, however, proceed from the influence of climate, and the difference of nourishment. In the northern parts of Europe, as Denmark and Norway, the sheep are not good ; but, to improve the breed, rams are occasionally imported from England. The rams, ewes, and widders of Iceland, differ chiefly from ours by larger and thicker horns. Some of them have three, four, and even five horns. This, however, is not common. In Spain, and the southern parts of Europe, the flocks of sheep are kept in shades or stables during the night : but in Britain, where there is now no danger from wolves, they are allowed to remain without, both night and day ; which makes the animals more healthy, and their flesh a more wholesome food. Dry and mountainous ground, where thyme and sheep's fescue grass abound, are the best for the pasturing sheep. Sheep are subject to many diseases : some arising from insects which deposit their eggs in different parts of the animal : others are caused by their being kept in wet pasture ; for as the sheep requires but little drink, it is naturally fond of a dry soil. The dropsy, vertigo (the pendro of the Welsh), the phthisis, jaundice, and worms in the liver, annually make great havock among our flocks : for the first disease, the shepherd finds a remedy by turning the infected into fields of broom ; which plant has been also found to be very efficacious in the same disorder among the human species. The sheep is also infested by different sorts of insects : like the horse, it has its peculiar cestrus or gadfly, which deposits its eggs above the nose in the frontal sinuses. When these turn into maggots, they become excessively painful. The French shepherds make a common practice of easing the sheep, by trepanning and taking out the maggot ; this practice is sometimes used by the English shepherds, but not always with the same success. Besides these insects, the sheep is troubled with a kind of tick and louse, which magpies and starlings contribute to ease it of, by lighting on its back, and picking the insects off. Mr. Kerr enumerates fifteen varieties of this species.

1. *O. aries Africana*, inhabiting Africa, and has short hair instead of wool.

2. *O. aries Anglica*, the English hornless sheep ; without horns ; the tail and scrotum hang down as low as the second joint of the hind leg, and the wool is fine. This kind is common in most parts of Britain ; those of Lincolnshire are the largest, and very small breeds are found in Wales and Shetland. They have generally either no horns or very small ones ; and many of them have very short tails.

3. *O. aries barbata*, the bearded sheep, or Siberian goat of Mr. Pennant, has a long divided beard, hanging down from the lower part of the cheeks and upper jaw. It is the tragelaphus of Pliny. It inhabits Barbary and Mauritania. The color is a pale rusty brown.

4. *O. aries Bucharica*, the Bucharian sheep of Pallas already described.

5. *O. aries Capensis*, the Cape Sheep, has large pendulous ears, and a large broad tail. The horns are short and bent back ; the body and neck are covered with long hair, or wool not curled ; the legs are black and naked.

6. *O. aries Guineensis*, the Guinea, or waddled sheep, already described.

7. *O. aries hispanica*, the Spanish sheep, has horns twisted into a spiral, which is lengthened outwards ; the wool is very fine and famous all over Europe.

8. *O. aries jubata*, the Chinese morvant, has a short red and gray mane on the neck ; and a long beard on the breast round the neck ; on the shoulders are longish red gray hairs ; the rest of the body is covered with a bright yellow wool, a little curled and soft at the ends, but coarse at the roots ; the legs are deep red ; the tail is yellow and white, with long coarse hairs.

9. *O. aries laticaudata*, the broad-tailed sheep, has a long and very broad tail. This kind is common in Syria, Barbary, Ethiopia, Thibet, and Tartary. The tails are so long as to trail on the ground. They are sometimes pointed at the end, but mostly rounded ; they sometimes weigh fifty pounds, and, being composed of a substance between fat and marrow, are reckoned a great delicacy. Those of Thibet produce the fine wool of which shawls are made.

10. *O. aries longicauda*, the long-tailed sheep, described before.

11. *O. aries nana*, the dwarf sheep, has no horns, is of a very small size, and has a turned up nose. This variety is found in Lincolnshire. The wool forms a ruff round its face. The under jaw is protruded ; the nose crooked upwards ; the ears small and erect.

12. *O. aries polycerata*, the many-horned sheep ; *ovis Gotlandica* of Pallas : the Iceland sheep of Buffon, has more than two horns. This variety is common in Iceland, Siberia, and Tartary ; but in the same flocks in which many are found with three, four, five, or six horns, others have only the usual pair : whence Mr. Kerr thinks they can hardly form a distinct variety.

13. *O. aries rustica*, the rustic, or black-faced sheep, is horned, the tail round and short, and the wool white but rather coarse. This is the most common breed of sheep all over Europe ; the horns are large, wrinkled, turned backwards in a comprised, spiral, screw-like twist, which comes down to the sides of the head, taking several turns, and becoming very large on old rams. The face is covered with short black, dark brown, or gray hair. They are very agile, and exceedingly shy. The mutton is much esteemed. The most perfect breed is found in Tweed-dale.

14. *O. aries steatopyga*, the fat-rumped sheep, described above.

iv. *O. pudu*, the pudu, or *capra puda* of Molina, has round, smooth, divergent horns, and inhabits the Cordilleras in South America. It is about the size of a half-year old kid, and lives in flocks on the mountains ; whence they descend into the south plains of Chili, when the hills are covered with snow. It resembles a goat, but the horns are small, and turned outwards, like those of a sheep. It has no beard ; the female has no horns ; the color is dusky. This is the only animal of the genus which seems indigenous to America.

v. *O. strepsiceros*, the Cretan sheep, or Wallachian sheep of Buffon. Described above. This

species inhabit Candia, and the other Grecian islands, and are common in Hungary and Austria, where they are called zackl.

OUISCONSIN, a river of the United States, which runs south-west into the Mississippi, lat. 43° 40' N. It is connected with Fox River, which flows into Green Bay by a portage of three miles. Length about 300 miles.

OULABAREAH, a trading town of Bengal in Burdwan, pleasantly situated on the west bank of the Hoogly River. On the destruction of the English factory at Hoogly, in 1687, this town was assigned for the residence of the British, but after the expenditure of some money, the president of the factory (Mr. Charnock) took a dislike to the place, and obtained permission to remove to Chuttanutty, a site now occupied by Calcutta. This town, which only consists of thatched houses, is situated eighty miles from the mouth of the river, and twenty below Calcutta.

OUNCE, *n. s.* Fr. *once*; Lat. *uncia*. A small weight.

The blood he hath lost,
Which I dare vouch is more than that he hath
By many an ounce, he dropt it for his country.
Shakespeare.

A sponge dry weigheth one ounce twenty-six grains; the same sponge, being wet, weigheth fourteen ounces six drams and three quarters. *Bacon.*

OUNCE, *n. s.* Fr. *once*; Span. *onsa*. An animal between a panther and a cat.

The ounce,
The libbard, and the tiger, as the mole
Rising, the crumbled earth above them threw
In hillocks. *Milton's Paradise Lost.*

OVOLO, or **OVUM**, in architecture, a round moulding, whose profile or sweep, in the Ionic and Composite capitals, is usually a quadrant of a circle: whence it is also commonly called the quarter-round. It is usually cut with representations of eggs and arrow-heads or anchors placed alternately.

OUPHE, *n. s.* } Teut. *auf*; Goth. *alf*. A
OUPE'N, *adj.* } fairy; elf; sprite: elfish.
Nan Page and my little son, we'll dress
Like urchins, *ouphes*, and fairies, green and white
Shakespeare.

Fairies, black, gray, green, and white,
Ye moon-shine revellers and shades of night,
You *ouphen* heirs of fixed destiny,
Attend your office. *Id.*

OU-POEY-TSE a name given by the Chinese to nests made by certain insects upon the leaves and branches of the tree called yen-fou-tse. These nests are much used in dyeing, and the physicians employ them for curing many distempers. Some of these nests were brought to Europe, and put into the hands of the celebrated Geoffroy. After having examined them with the utmost attention, this learned academician thought he perceived some conformity in them to those excrescences which grow on the leaves of the elm, and which the vulgar call elm-bladders: he found these nests so sharp and astringent to the taste, that he considered them as far superior to every other species of galls used by the dyers. According to him, they are the strongest astringents existing in the vegetable kingdom. It is certain that there is a great affinity between the

ou-poe-y-tse and the elm-bladders. The form of both is unequal and irregular; they are covered on the outside with a short down, which renders them soft to the touch: within they are full of a whitish gray dust, in which may be observed the dried remains of small insects, without discovering any aperture through which they might have passed. These nests or bladders harden as they grow old; and their substance, which appears resinous, becomes brittle and transparent; however, the Chinese do not consider the ou-poe-y-tse, notwithstanding their resemblance to elm-bladders, as excrescences of the tree yen-fou-tse, upon which they are found. They are persuaded that the insects produce a kind of wax, and construct for themselves on the branches and leaves of this tree (the sap of which is proper for their nourishment) little retreats, where they may wait for the time of their metamorphosis, or at least deposit in safety their eggs, which compose that fine dust with which the ou-poe-y-tse are filled. Some of the ou-poe-y-tse are as large as one's fist; but these are rare, and are generally produced by a worm of extraordinary strength, or which has associated with another, as two silk-worms are sometimes seen shut up in the same ball. The smallest ou-poe-y-tse are of the size of a chestnut; the greater part of them are round and oblong; but they seldom resemble one another entirely in their exterior configuration. At first they are of a dark green color, which afterwards changes to yellow; and the husk, though pretty firm, becomes then very brittle. The Chinese peasants collect these before the first hoar-frosts. They take care to kill the worm enclosed in the husks, by exposing them for some time to the steam of boiling water. Without this precaution, the worm might soon break through its weak prison, which would immediately burst and be useless. They are used at Pekin for giving paper a durable and deep black color; in the provinces of Kiang-nan and Tche-Kiang, where a great deal of beautiful satin is made, they are employed for the dyeing of the silk before it is put on the loom. The Chinese literati also blacken their beards with them when they become white. The medicinal properties of the ou-poe-y-tse are very numerous. The Chinese physicians introduce them into the composition of many of their remedies.

OUR, *pron. poss.* } Sax. *ure*; Goth. *uar*;
OURSELF, } Dan. *wor*. Of or belong-
OURSELVES. } ing to us; when placed
after the substantive, it is written ours; or self
is a barbarism formerly used in the regal style or
title: ourselves is the plural reciprocal pro-
noun of we, added to we by way of emphasis,
and used also for us, not others, in oblique
cases.

You shall
Lead our first battle, brave Macduff, and we
Shall take upon us what else remains.
Shakespeare.

Edmund, whose virtue in this instance
So much commands itself, you shall be ours. *Id.*

To make society
The sweeter welcome, we will keep *ourselves*
Till supper-time alone. *Id. Macbeth.*

Not so much as a treaty can be obtained, unless
we would denude *ourselves* of all force to defend us.

Clarendon.

Be *ours*, whose'er thou art,

Forget the Greeks.

Denham.

Taxallan, shook by Montezuma's powers,

Has, to resist his forces, called in *ours*.

Dryden.

Safe in *ourselves*, while on *ourselves* we stand,
The sea is *ours*, and that defends the land.

Dryden.

Reading furnishes the mind only with materials
of knowledge, it is thinking makes what we read
ours : it is not enough to cram ourselves with a great
load of collections ; unless we chew them over again,
they will not give us strength.

Locke.

We *ourselves* might distinctly number in words a
great deal farther than we usually do, would we find
out but some fit denominations to signify them by.

Id.

Our confession is not intended to instruct God,
who knows our sins much better than *ourselves* do,
but it is to humble *ourselves*, and therefore we must
not think to have confessed aright till that be done.

Duty of Man.

Their organs are better disposed than *ours* for re-
ceiving grateful impressions from sensible objects.

Atterbury.

Our soul is the very same being it was yesterday,
last year, twenty years ago.

Beattie.

He is *ours*,

To administer, to guard, to adorn the state,

But not to warp or change it. We are his,

To serve him nobly in the common cause,

True to the death, but not to be his slaves.

Cowper.

Long life to the grape ! for, when summer is flown,
The age of *our* nectar shall gladden *our* own ;

We must die, who shall not ? may *our* sins be for-
given,

And Hebe shall never be idle in heaven.

Byron.

The sword we dread not :—of *ourselves* secure,
Firm were *our* strength, *our* peace and freedom sure.—

Let all the world confederate all its powers,

“ Be they not backed by those that should be *ours*.”

High on his rock shall Britain's genius stand,

Scatter the crowded hosts, and vindicate the land.

Canning.

OURAL. See URAL MOUNTAINS.

OURALSK, the capital city of the Cossacs
of the Oural, is a large and populous place, but
irregularly built. The Cossacs are divided
into seven regiments, the whole commanded by
the ataman of the troops, under the superintend-
ance of the governor-general of Orenbourg.
Their occupation chiefly consists in taking fish,
which are abundant in the Oural, and are sup-
posed to be of a superior quality to those caught
in the Caspian. The place is surrounded with
an irregular rampart. Inhabitants 3700. Long.
52° 6' E., lat. 50° 11' N.

OURCHA, a town, once a famous city, of
Hindustan, in Allahabad, and Bundelcund. The
rajah of Ourcha being once the head of all the
Bondelah tribes; the present family are of the
Rajpoot race, and their ancestor is said to have
obtained possession of his dignity by the murder
of his predecessor, to which it is stated that he
added that of the celebrated Abul Fazil. At his
death he was master of fifty-two forts, which,
with the territories depending, he divided by will
among his eight sons, leaving, however, the
largest portion, with the title of rajah, to his
eldest son, named Hajar or Jijer Sing. This

prince having, in the year 1628, opposed the
measures of the emperor Shah Jehan, his country
was invaded, and himself and son taken prisoner ;
but, by the payment of a sum of money, he was
released, and restored to his dignity. In 1633
he again rebelled, when another Mogul army,
under the command of Aurungzebe, entered the
country, and, having taken several of his forts, at
length besieged him in his strongest fortress,
called Joragur. The rajah, being reduced to
despair, put his women and children to death,
and issuing from the fort, at the head of his
cavalry, cut his way through the besiegers, and,
although closely pursued, effected his escape
into the province of Gundwana, where he and
all his followers were put to death by the inha-
bitants for the sake of the plunder they brought
with them. After this a relation of the present
family was raised to the throne by Aurungzebe,
and this rajah is still the head of the chiefs of
Bundelcund. His revenue is about £2000 per
annum.

OURFA, or ORFA, a pachalic of Asiatic
Turkey, forming a part of the ancient Mesopo-
tamia. It is almost entirely encircled by the
windings of the Euphrates and the Khabour ; and
touches north and east on the pachalic of Diar-
bekir, while on the south and west it is separated
by the Euphrates from the deserts of Syria. The
southern part is, for the most part, sandy and
uncultivated, inhabited by nomade tribes of
Arabs. In the north, being more mountainous
and diversified, it is better inhabited. This divi-
sion of Mesopotamia was taken from the empe-
ror Heraclius, by Yezid, the general of the Sara-
cens ; seized during the first crusade by Baldwin,
brother to Godfrey of Bouillon ; and erected
into a Christian principality. It was included
in the dominions of Saladin, and was subsequently
swallowed up in the Turkish empire. The towns
are Ourfa, Racca, and Soverick.

OURFA, a town of Turkey in Asia, the capi-
tal of the above pachalic. Under the successors
of Alexander it was known as Edessa, and after-
wards became the residence of the Courtneys,
when they erected a kingdom in Asia. It was
sacked by Zingis in the thirteenth century, and
by Timur in the fourteenth. Since falling to
the Turks, it has been the residence of a pacha
with two tails. It is built on two hills, and in
the intermediate valley at the south-west extre-
mity of a fine plain. The town is about three
miles in circumference, surrounded by walls, and
defended by square towers ; and it is adorned
by some fine springs, which rise from the hills.
The castle is on the south side of the city. The
ascent is very steep, and the hill is here about
half a mile in circumference, surrounded by a
deep ditch cut in the rock, which, when neces-
sary, can be filled with water. On the rock are
also the ruins of a building called by the Arabs
the palace of Nimrod, consisting of two lofty and
fine Corinthian pillars, and having some extra-
ordinary subterraneous apartments. Ourfa con-
tains also a magnificent mosque, dedicated to
Abraham, and a handsome but decayed Armenian
cathedral. It is the thoroughfare for the cara-
vans which pass from Aleppo into the interior of
Persia, and noted for the preparation of Turkey

oather. The inhabitants, Turks, Arabs, Armenians, Jews, and Nestorians, are said to be about 20,000.

OURIQUE, a town of Portugal in Alentejo, remarkable for a victory obtained at it by Viriatus over the Romans, in the year of Rome 606, and for another by Alphonso I. over the Moors A. D. 1139. Population 2300. Eighty-nine miles S. S. E. of Lisbon.

OUSE, in geography, a river of Sussex, formed by two streams, which rise, the one in St. Leonard's forest, the other in that of Worth; it then passes by Lewes, and falls into the channel below Newhaven, where it forms a good harbour at its mouth.

OUSZ, a river of Yorkshire, formed by the conflux of the Eure and the Swale, four miles below Boroughbridge; after which it passes by Aldborough, York, Selby, &c., and after receiving the Wharf from the north-west, the Derwent from the north-east, the Aire from the west, the Don from the south-west, joins the Trent on the borders of Lincolnshire; where the united streams form the Humber, seventeen miles west of Hull. See **HUMBER**.

OUSE, GREATER, a river of England, which rises near Fitwell in Oxfordshire, and proceeds to Buckingham, Stony-Stratford, and Newport-Pagnel, in Buckinghamshire; thence it proceeds to Bedford, and turning north-east it passes on to Huntingdon and Ely, till at length it arrives at Lynn-Regis in Norfolk, and falls into the sea. It is navigable to some distance above Downham, where there is a good harbour for barges; and a considerable trade is carried on by it to Lynn and other towns. It is liable to great floods at the equinoxes.

OU'SEL, *n. s.* Sax. *orle*. A blackbird.

The merry lark her mattins sings aloft,
The thrush replies, the mavis descant plays,
The *ousel* shrills, the ruddock warbles soft;
So goodly all agree with sweet consent,
To this day's merriment. *Spenser*.

The *ousel* cock so black of hue,
With orange tawney bill. *Shakespeare*.

Thrushes, and *ousels*, or blackbirds, were commonly sold for three pence a-piece. *Hakewill*.

OUST, *v. a.* Fr. *ouster*; Goth. *austa*. To force or cast out; deprive; eject.

Multiplication of actions upon the case were rare formerly, and thereby wager of law *ousted*, which discouraged many suits. *Hale*.

Though the deprived bishops and clergy went out upon account of the oaths, yet this made no schism. No, not even when they were actually deprived and *ousted* by act of parliament. *Lesley*.

OUSTER, or dispossession, in law, an injury which carries with it the amotion of possession; for by means of it the wrong doer gets into the actual possession of the land or hereditament, and obliges him that has a right to seek a legal remedy, in order to gain possession, together with damages. This ouster may either be of the freehold by abatement, intrusion, disseisin, discontinuance, and forfeiture; or of chattels real, as an estate by statute-merchant, statute-staple or elegit, or an estate for years.

OUT, *adv., interj. & v. a.*

OUT OF, *prep.*

OUT'ER, *adj.*

OUT'ERLY, *adv.*

OUT'ERMOST, *adj.*

OUT'MOST,

OUT'WARD, *adj., adv. & n. s.*

OUT'WARDLY, *adv.*

OUT'WARDS, *adv.*

Sax. ut; Belg.

ust; Swed. utt.

Abroad; dis-

closed; unco-

vered; exhaust-

ed; ejected; un-

employed; un-

restrained; to

the end; away;

erroneously; at a loss; deficient; used emphatically with verbs of discovery, as, 'he is found out,' and before *alas!* as in the extract from Suckling: as an interj. it expresses abhorrence or disgust, and commands expulsion: to out, is to deprive by expulsion: out of, is to be regarded as a kind of compound preposition in which *out* modifies the sense of *of*; their joint meaning is from; beyond; without; excluded; dismissed; not or no longer in; past; by means or in consequence of; denoting absence; dereliction; unfitness; extraction; separation; rescue; irregularity; change of state; exhaustion: 'out of hand' means immediately; quickly done: outer, without; opposed to inner: outerly, towards the outside: outermost, remotest from the middle: outmost, a contraction of outermost; utmost: outward is external; extrinsic; visible; foreign; tending towards the outside; to foreign or outer parts; external form: outwardly corresponds: outwards is towards the outside.

If ye will not do so, be sure your sin will find you out. *Numbers xxxii. 23.*

So many Neroes and Caligulas,
Out of these crooked shores must daily rise. *Spenser*.

He bade to open wide his brazen gate,
Which long time had been shut, and out of hand
Proclaimed joy and peace through all his state. *Id.*

The sacred nymph
Was out of Dian's favor, as it then befel. *Faerie Queene*.

Amongst those things which have been received with great reason, ought that to be reckoned which the ancient practice of the church hath continued out of mind. *Hooker*.

That which inwardly each man should be, the church outwardly ought to testify. *Id.*

It was great ign'rance, Gloster's eyes being out,
To let him live; where he arrives he moves
All hearts. *Shakespeare. King Lear.*

Like a dull actor now,
I have forgot my part and I am out,
Even to a full disgrace. *Shakespeare. Coriolanus*.
Court holy water in a dry house, is better than the rain waters out of door. *Id. King Lear.*

Out, varlet, from my sight. *Id.*
She is persuaded I will marry her, out of her own love and flattery, not out of my promise. *Shakespeare. Othello*.

Sweet prince, the' untainted virtue of your years
Hath not yet dived into the world's deceit;
Nor more can you distinguish of a man,
Than of his outward shew! *Id. Richard III.*

I do not think
So fair an outward, and such stuff within,
Endows a man but him. *Id. Cymbeline*.
So we'll live and bear poor rogues
Talk of court news, and we'll talk with them too
Who loses, and who wins, who's in, who's out.
Shakespeare.

When the butt is *out* we will drink water, not a drop before; bear up and board them. *Id.*

Guiltiness

Will speak, though tongues were *out* of use. *Id.*

I am *out* of breath.

—How art thou *out* of breath, when thou hast breath

To say to me that thou art *out* of breath? *Id.*

No more ado,

But gather we our forces *out* of hand,

And set upon our boasting enemy. *Id.*

Out on thee, rude man! thou dost shame thy mother. *Id.*

This youth was such a mercurial, as the like hath seldom been known; and could make his own part, if at any time he chanced to be *out*. *Bacon.*

Juices of fruits are watery and oily: among the watery are all the fruits *out* of which drink is expressed; as the grape, the apple, the pear, and cherry. *Id.*

The pope, *out* of the care of an universal father, had in the conclave divers consultations about an holy war against the Turk. *Id.*

Fruits and grains are half a year in concocting; whereas leaves are *out* and perfect in a month. *Id.*

Try if three bells were made one within another, and air betwixt each; and the *outermost* bell were chimed with a hammer, how the sound would differ from a single bell. *Id.*

It was intended to raise an *outward* war to join with some sedition within doors. *Hayward.*

Grieved with disgrace, remaining in their fears,

However seeming *outwardly* content,

Yet the' inward touch their wounded honour bears. *Daniel.*

Out, alas! no sea I find,
Is troubled like a lover's mind.

Suckling.

The members of both houses who withdrew were counted deserters, and *outed* of their places in parliament. *King Charles.*

Outward appearances are deceitful guides to our judgments or our affections. *Hall.*

When the soul being inwardly moved to lift itself up by prayer, the *outward* man is surprised in some other posture; God will rather look to the inward motions of the mind, than to the *outward* form of the body. *Duppa.*

Let all persons avoid niceness in their cloathing or diet, because they dress and comb out all their opportunities of morning devotion, and sleep *out* the case for their souls. *Taylor.*

Cromwell accused the earl of Manchester of having betrayed the parliament *out* of cowardice. *Clarendon.*

Out, out, hyena; these are thy wonted arts,
To break all faith. *Milton's Agonistes.*

Chaos retired,
As from her *outermost* works a broken foe. *Milton.*

Not *out* of cunning, but a train

Of atoms justling in his brain,

As learned philosophers give *out*. *Hudibras.*

Many handsome contrivances of draw-bridges I had seen, sometimes many upon one bridge, and not only one after, or behind another, but also sometimes two or three on a breast, the *outermost* ones serving for the retreat of the foot, and the middle for the horse and carriages. *Browne.*

As he that hath been often told his fault,

And still persists, is as impertinent

As a musician that will always play,

And yet is always *out* at the same note. *Roscommon.*

Upon the great Bible, he was *out* fifty pounds, and reimburs'd himself only by selling two copies. *Fell.*

Make them conformable to laws, not only for wrath and *out* of fear of the magistrate's power, which is but a weak principle of obedience; but *out* of conscience, which is a firm and lasting principle. *Tillotson.*

With a longer peace, the power of France with so great revenues, and such application, will not increase every year *out* of proportion to what ours will do. *Temple.*

You have still your happiness in doubt,
Or else 'tis past, and you have dreamed it *out*. *Dryden.*

The cavern's mouth alone was hard to find,

Because the path disused was *out* of mind. *Id.*

He is softer than Ovid; he touches the passions more delicately, and performs all this *out* of his own fund, without diving into the sciences for a supply. *Id.*

He took a lowering leave; but who can tell
What *outward* hate might inward love conceal? *Id.*

So many of their orders, as were *outed* from their fat possessions, would endeavour a re-entrance against those whom they account heretics. *Id.*

Distinguish betwixt those that take state upon them, purely *out* of pride and humour, and those that do the same in compliance with the necessity of their affairs. *L'Estrange.*

If the laying of taxes upon commodities does affect the land that is *out* at rack rent, it is plain it does equally affect all the other land in England too. *Lacke.*

The kidney is a conglomerated gland only in the *outer* part: for the *inner* part, whereof the papilla are composed, is muscular. *Grew's Cosmol.*

In the lower jaw, two tusks like those of a boar, standing *outerly*, an inch behind the cutters. *Grew.*

St. Paul quotes one of their poets for this saying, notwithstanding T. G.'s censure of them *out* of Horace. *Stillington.*

Many wicked men are often touched with some inward reverence for that goodness which they cannot be persuaded to practise; nay, which they *outwardly* seem to despise. *Sprat.*

Those that have recourse to a new creation of waters, are such as do it *out* of laziness and ignorance, or such as do it *out* of necessity. *Burnet.*

What they do not grant *out* of the generosity of their nature, they may grant *out* of mere impatience. *Smallbridge.*

Christianity recovered the law of nature *out* of all those errors with which it was overgrown in the times of paganism. *Addison.*

Thoult say my passion's *out* of season,
That Cato's great example and misfortunes
Should both conspire to drive it from my thoughts. *Id.*

The tale is long, nor have I heard it *out*;
Thy father knows it all. *Id. Cato.*

The gown with stiff embroid'ry shining,

Looks charming with a slighter lining;

The *out*, if Indian figures stain,

The inside must be rich and plain. *Prior.*

Do not black bodies conceive heat more easily from light than those of colours do, by reason that the light falling on them is not reflected *outwards*, but enters the bodies, and is often reflected and refracted within them until it be stifled and lost? *Newton's Optica.*

If any man suppose that it is not reflected by the air, but by the *outermost* superficial parts of the glass, there is still the same difficulty. *Id.*

The generality of men are readier to fetch a *run-*

son from the immense distance of the starry heavens,
and the *outmost* walls of the world. *Bentley.*

Our successes have been the consequences of a
necessary war; in which we engaged, not *out* of
ambition, but for the defence of all that was dear to
us. *Atterbury.*

Those lands were *out* upon leases of four years,
after the expiration of which tenants were obliged to
renew. *Arbutnot.*

At all I laugh, he laughs no doubt;
The only difference is, I dare laugh *out*. *Pope.*

My retreat the best companions grace,
Chiefs *out* of war, and statesmen *out* of place. *Id.*

According to Hobbes's comparison of reasoning
with casting up accounts, whoever finds a mistake
in the sum total, must allow himself *out*, though
after repeated trials he may not see in which article
he has misreckoned. *Swift.*

Large coals are properest for dressing meat; and
when they are *out*, if you happen to miscarry in
any dish, lay the fault upon want of coals. *Id.*

Whereas insisting in or *out* of season
Convinces all men, even a politician;
Or—what is just the same—it wears *out*.
So the end's gained, what signifies the route? *Byron.*

OUTACT, *v. a.* Out and act. To do be-
yond.

He has made me heir to treasures,
Would make me *out-act* a real widow's whining. *Otway.*

OUTBALANCE, *v. a.* Out and balance.
To overweigh; to preponderate.

Let dull Ajax bear away my right,
When all his days *outbalance* this one night. *Dryden.*

OUTBAR', *v. a.* Out and bar. To shut out
by fortification.

These to *outbar* with painful pionings,
From sea to sea be heaped a mighty mound. *Spenser.*

OUTBID', *v. a.* Out and bid. To over-
power by bidding a higher price.

If in thy heart
New love created be by other men,
Which have their stocks entire, and can in tears,
In sighs, in oaths, in letters *outbid* me,
This new love may beget new fears. *Donne.*

For Indian spices, for Peruvian gold,
Prevent the greedy, and *outbid* the bold. *Pope.*

OUTBIDDER, *n. s.* Out and bid. One
that *outbids*.

OUTBLOWED', *adj.* Out and blow. In-
flated; swollen with wind.

At their roots grew floating palaces,
Whose *outblown* bellies cut the yielding seas. *Dryden.*

OUTBORN', *adj.* Out and born. Foreign;
not native.

OUTBOUND', *adj.* Out and bound. Des-
tinated to a distant voyage; not coming home.

Triumphant flames upon the water float,
And *outbound* ships at home their voyage end. *Dryden.*

OUTBRAVE', *v. a.* Out and brave. To bear
down and defeat by more daring, insolent; or
splendid appearance.

I would outstare the sternest eyes that look,
Outbrave the heart most daring on the earth,
To win thee, lady. *Shakspeare.*

Here Sodom's towers raise their proud tops on
high,

The towers, as well as men, *outbrave* the sky. *Cowley.*

We see the danger, and by fits take up some
faint resolution to *outbrave* and break through it. *L'Estrange.*

OUTBRAZEN, *v. a.* Out and brazen. To
bear down with impudence.

OUTBREAK, *n. s.* Out and break. That
which breaks forth; eruption.

Breathe his faults so quaintly
That they may seem the taints of liberty,
The flash and *outbreak* of a fiery mind. *Shakspeare.*

OUTBREATHE', *v. a.* Out and breathe.
To weary by having better breath; to expire.

Mine eyes saw him
Rendering faint quittance, wearied and *outbreathed*,
To Henry Monmouth. *Shakspeare.*
That sign of last *outbreathed* life did seem. *Spenser.*

OUTCAST, *n. s. & part.* Out and cast. It
may be observed that both the participle and
the noun are indifferently accented on either syl-
lable. It seems most analogous to accent the
participle on the last, and the noun on the first.
Thrown into the air as refuse, as unworthy of
notice; banished,—hence an exile.

Abandon soon, I read, the captive spoil
Of that same *outcast* carcass. *Spenser.*

Let's be no stoicks, nor no stocks,
Or so devote to Aristotle,
As Ovid, be an *outcast* quite abjured. *Shakspeare.*

O blood-bespotted Neapolitan,
Outcast of Naples, England's bloody scourge! *Id.*

Behold, instead
Of us *outcast*, exiled, his new delight
Mankind created. *Milton's Paradise Lost.*
For me, *outcast* of human race,
Love's anger only waits, and dire disgrace. *Prior.*

He dies sad *outcast* of each church and state!
And harder still flagitious, yet not great. *Pope.*

OUTCHANG-FOU, a city of China, of the
first rank, the capital of the province of Hou-
quang. Hang-yang-fou, a city on the opposite
side of the river Yang-tse-kiang, added to this
constitutes the emporium of the central part of
the empire, and the river, though 500 miles from
the sea, is here navigable for the largest vessels.
The country around is noted for its fine tea, and
bamboo paper.

OUTCRAFT, *v. a.* Out and craft. To excel
in cunning.

Italy hath *outcrafted* him,
And he's at some hard point. *Shakspeare. Cymbeline.*

OUTCRY, *n. s.* Out and cry. Cry of ve-
hemence; cry of distress; clamor; clamor of
detestation.

These *outcries* the magistrates there shun, since
they are readily hearkened unto here. *Spenser.*
So strange thy *outcry*, and thy words so strange
Thou interposest, that my sudden hand
Prevented, spares. *Milton's Paradise Lost.*

I make my way
Where noises, tumults, *outcries*, and alarms
I heard. *Denham.*

There is not any one vice, incident to the mind of man, against which the world has raised such a loud and universal outcry, as against ingratitude.

South.

OUTDARE', v. a. Out and dare. To venture beyond.

Myself, my brother, and his son,
That brought you home, and boldly did outdare
The dangers of the time. *Shakespeare.*

OUTDATE', v. a. Out and date. To antiquate.

Works and deeds of the law, in those places signify legal obedience, or circumcision, and the like Judaical outdated ceremonies; faith, the evangelical grace of giving up the whole heart to Christ, without any such Judaical observances. *Hammond.*

OUTDO', v. a. Out and do. To excel; to surpass; to perform beyond another.

He hath in this action outdone his former deeds, doubly. *Shakespeare.*

What brave commander is not proud to see
Thy brave Melantius in his gallantry?
Our greatest ladies love to see their scorn
Outdone by thine, in what themselves have worn.

Waller.

Heavenly love shall outdo hellish hate,
Giving to death, and dying to redeem,
So dearly to redeem what hellish bate
So easily destroyed. *Milton.*
Here let these who boast in mortal things,
Learn how their greatest monuments of fame,
And strength, and art, are easily outdone
By spirits reprobate. *Id.*

An impostor outdoes the original. *L'Estrange.*
I must confess the encounter of that day
Warmed me indeed, but quite another way;
Not with the fire of youth, but generous rage,
To see the glories of my youthful age
So far outdone. *Dryden.*

The boy's mother, despised for not having read a system of logick, outdoes him in it. *Locke.*

I grieve to be outdone by Gay,
In my own humorous biting way. *Swift.*

OUTDWELL', v. a. Out and dwell. To stay beyond.

He outdwells his hour;
For lovers ever run before the clock.

Shakespeare.

OUTFACE', v. a. Out and face. To brave; to bear down by show of magnanimity; to bear down with impudence; to stare down.

We shall have old swearing
That they did give the rings away to men;
But we'll outface them, and out-swear them too.

Shakespeare.

Dost thou come hither
To outface me with leaping in her grave?
Be buried quick with her, and so will I. *Id.*
Be fire with fire;

Threaten the threatener; and outface the brow
Of bragging horror. *Id. King John.*

We behold the sun, and enjoy his light, as long as we look towards it circumspectly; we warm ourselves safely while we stand near the fire; but if we seek to outface the one, to enter into the other, we forthwith become blind or burnt. *Raleigh.*

They bewrayed some knowledge of their persons, but were outfaced. *Wotton.*

OUTFAWN', v. a. Out and fawn. To excel in fawning.

In affairs of less import
That neither do us good nor hurt,

And they receive as little by,
Outfawn as much and out comply;
And seem as scrupulously just
To bait the hooks for greater trust.

Hudibras.

OUTFLY', v. a. Out and fly. To leave behind in flight.

His evasion winged thus swift with scorn,
Cannot outfly our apprehensions. *Shakespeare.*

Horoscop's great soul,
Raised on the pinions of the bounding wind,
Outflew the rack, and left the hours behind.

Garth.

OUTFORM', n. s. Out and form. External appearance.

Cupid, who took vain delight
In mere outforms, until he lost his sight,
Hath changed his soul, and made his object you.

Ben Jonson.

OUTFROWN', v. a. Out and frown. To frown down; to overbear by frowns.

For thee, oppressed king, am I cast down,
Myself could else outfrown false fortune's frown.

Shakespeare.

OUTGATE, n. s. Out and gate. Outlet; passage outwards.

Those places are so fit for trade, having most convenient out-gates by divers ways to the sea, and ingates to the richest parts of the land, that they would soon be enriched. *Spenser.*

OUTGIVE', v. a. Out and give. To surpass in giving.

The bounteous player outgave the pinching lord.

Dryden.

OUTGO', v. a. *pref.* outwent; *part.* outgone. Out and go. To surpass; to excel; to pass; to circumvent.

Many ran afoot thither out of all cities, and outwent them, and came unto him. *Mark vi. 33.*

For frank, well ordered, and continual hospitality, he out-went all shew of competence. *Carew.*

Molleson

Thought us to have out-gone
With a quaint invention. *Denham.*

While you practised the rudiments of war, you out-went all other captains; and have since found none but yourself alone to surpass. *Dryden.*

Where they apply themselves, none of their neighbours out-go them. *Locke on Education.*

OUTGROW', v. a. Out and grow. To surpass in growth; to grow too great or too old for any thing.

Much their work outgrew,
The hands dispatch of two, gard'ning so wide.

Milton.

When some virtue much outgrows the rest,
It shoots too fast and high. *Dryden.*

This essay wears a dress that possibly is not so suitable to the graver geniuses, who have outgrown all gaieties of stile and youthful relishes. *Chamville.*

The lawyer, the tradesman, the mechanic, have found so many arts to deceive, that they far outgrow the common prudence of mankind. *Swift.*

OUTGUARD, n. s. Out and guard. One posted at a distance from the main body, as a defence.

As soon as any foreign object presses upon the sense, those spirits which are posted upon the outguards, immediately scow off to the brain. *South.*

These outguards of the mind are sent abroad,
And still patrolling beat the neighbouring road.

Or to the parts remote obedient fly,
Keep posts advanced, and on the frontier lye.

Blackmore.

OUTJEST, *v. a.* Out and jest. To overpower by jesting.

The fool labours to outjest
His heart-struck injuries.

Shakespeare. King Lear.

OUTKNAVE, *v. a.* Out and knave. To surpass in knavery.

The world calls it out-witting a man, when he is only outknaved.

L'Estrange.

OUTLAND'ISH, *adj.* Out and land. Not native; foreign.

Yourself transplant

Awhile from hence : perchance *outlandish* ground
Bears no more wit than ours ; but yet more scant
Are those diversions there which here abound.

Donne.

Tedious waste of time to sit and hear

So many hollow compliments and lies,

Outlandish flatteries.

Milton.

Upon the approach of the king's troops, under general Wallis, who was used to the *outlandish* way of making war, we put in practice passive obedience.

Addison.

OUTLAST, *v. a.* Out and last. To surpass in duration.

Good housewives, to make their candles burn the longer, lay them in bran, which makes them harder ; inasmuch as they will *out-last* other candles of the same stuff, half in half.

Bacon.

Summer's chief honour, if thou hadst *outlasted*
Bleak winter's force that made thy blossoms dry.

Milton.

The present age hath attempted perpetual motions, whose revolutions might *outlast* the exemplary mobility, and out-measure time itself.

Browne.

What may be hoped,

When not from Helicon's imagined spring,

But sacred writ, we borrow what we sing ?

This with the fabrick of the world begun,

Elder than light, and shall *outlast* the sun.

Waller.

OUTLAW, *n. s. & v. a.* } Sax. *utlaga*; Goth.

OUTLAWRY. } *utlag*. One excluded

from the benefits or protection of the law ; to deprive of such benefits ; the decree or word of deprivation.

Gathering unto him all the scatterlings and *outlaws* out of the woods and mountains, he marched forth into the English pale.

Spenser.

As long as they were out of the protection of the law, so as every Englishman might kill them, how should they be other than *outlaws* and enemies to the crown of England ?

Davies.

I had a son

Now *outlawed* from my blood ; he sought my life.

Shakespeare.

He that is drunken

Is *outlawed* by himself ; all kind of ill

Did with his liquor slide into his veins.

Herbert.

Like as there are particular persons *outlawed*, and proscribed by civil laws, so are there nations that are *outlawed* and proscribed by the law of nature and nations.

Bacon.

Divers were returned knights and burgesses for the parliament ; many of which had been by Richard III. attainted by *outlawries*.

Id.

You may as well spread out the unsunn'd heaps
Of miser's treasure by an *outlaw's* den,

And tell me it is safe, as bid me hope

Danger will let a helpless maiden pass.

Milton.

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A drunkard is *outlawed* from all worthy and creditable converse : men abhor, loath, and despise him.

South.

All those spiritual aids are withdrawn, which should assist him to good, or fortify him against ill ; and like an *outlawed* person he is exposed to all that will assault him.

Decay of Piety.

OUTLAWRY is the punishment of a person who, being called into law, and lawfully, according to the usual forms, sought, does contemptuously refuse to appear. The effect of being outlawed at the suit of another, in a civil cause, is the forfeiture of all the person's goods and chattels to the king, and the profits of his land, while the outlawry remains in force. If in treason or felony, all the lands and tenements which he has in fee, or for life, and all his goods and chattels, are also forfeited ; and, besides, the law interprets his absence as a sufficient evidence of guilt ; and, without requiring farther proof, accounts the person guilty of the fact ; on which ensues corruption of blood, &c. However, to avoid inhumanity, no man is entitled to kill him wantonly or wilfully ; but in so doing he is guilty of murder, unless it happens in endeavouring to apprehend him ; for any body may arrest an outlaw, either of his own head, or by writ or warrant of *capias utlagatum*, in order to bring him to execution. If, after outlawry in civil cases, the defendant publicly appear, he is to be arrested by a writ of *capias utlagatum*, and committed till the outlawry be reversed ; which reversal may be had by the defendant's appearing in court (and in the king's bench by sending an attorney, according to statutes 4 and 5 William and Mary cap. 18), and any plausible circumstance, however trifling, is in general sufficient to reverse it ; it being considered only as a process to force appearance. The defendant must, however, pay full costs, and must put the plaintiff in the same condition as if he had appeared before the writ of *exegi facias* was awarded. It is appointed by magna charta that no freeman shall be outlawed, but according to the law of the land. A minor or a woman cannot be outlawed. In Scotland outlawry anciently took place in the case of refusal to fulfil a civil obligation, as well as in criminal cases. At present, however, it only takes place in the two cases of flying from a criminal prosecution, and of appearing in court attended by too great a number of followers. But the defender, upon appearing at any distance of time, and offering to stand trial, is entitled, *de jure*, to have the outlawry reversed, and to be admitted to trial accordingly, and even to bail, if the offence be bailable.

OUTLEAP, *n. s.* Out and leap. Sally ; flight ; escape.

Since youth must have some liberty, some *outleaps*, they might be under the eye of a father, and then no very great harm can come of it.

Locke.

OUTLET, *n. s.* Out and let. Passage outwards ; discharge outwards ; egress ; passage of egress.

Colonies and foreign plantations are very necessary, as *outlets* to a populous nation.

Bacon.

The enemy was deprived of that useful *outlet*.

Clarendon.

So 'scapes the' insulting fire his narrow jail,

And makes small *outlets* into open air.

Dryden.

Have a care that these members be neither the inlets nor outlets of any vices; that they neither give admission to the temptation, nor be expressive of the conception of them. *Ray.*

OUTLINE, *n. s.* Out and line. Contour; line by which any figure is defined; extremity.

Painters, by their *outlines*, colours, lights, and shadows, represent the same in their pictures. *Dryden.*

But, more or less, the whole's a syncope
Or a singultus—emblems of Emotion,
'The grand Antithesis to great Ennui,
Wherewith we break our bubbles on the ocean,
That watery *outline* of eternity. *Byron.*

OUTLIVE, *v. a.* Out and live. To live beyond; to survive.

Will these mossed trees,
That have *outlined* the eagle, page thy heels,
And skip when thou point'st out? *Shakspeare.*
Die two months ago, and not forgotten!
'Yet then there is hopes a great man's memory
May *outlive* his life half a year. *Id.*
He that *outlives* this day, and comes safe home,
Will stand a tiptoe when this day is named. *Id.*
His courage was so signal that day, that too much
could not be expected from it, if he had *outlined* it. *Clarendon.*

Thou must *outlive*
Thy youth, thy strength, thy beauty, which will
change
To withered, weak, and gray. *Milton.*
Time, which made them their fame *outlives*,
To Cowley scarce did ripeness give. *Denham.*
The soldier grows less apprehensive by computing
upon the disproportion of those that *outlive* a battle,
to those that fall in it. *L'Estrange.*

Since we have lost
Freedom, wealth, honour, which we value most,
I wish they would our lives a period give;
They live too long who happiness *outlive*. *Dryden.*

It is of great consequence where noble families
are gone to decay; because their titles *outlive* their
estates. *Swift.*

Pray *outlive* me, and then die as soon as you
please. *Id.*

Two bacon-flitches made his Sunday's cheer;
Some the poor had, and some *outlived* the year. *Harte.*

OUTLOOK, *v. a.* Out and look. To face down; to brow beat.

I culled these fiery spirits from the world,
To *outlook* conquest, and to win renown,
Even in the jaws of danger and of death. *Shakspeare.*

OUTLUSTRE, *v. a.* Out and lustre. To excel in brightness.

She went before others I have seen, as that diamond of yours *out-lustres* many I have beheld. *Shakspeare. Cymbeline.*

OUTLY'ING, *part. adj.* Out and lie. Not in the common course of order; removed from the general scheme.

The last survey I proposed of the four *out-lying* empires, was that of the Arabians. *Temple.*

We have taken all the *out-lying* parts of the Spanish monarchy, and made impressions upon the very heart of it. *Addison.*

OUTMARCH, *v. a.* Out and march. To leave behind in the march.

The horse *out-marched* the foot, which, by reason of the heat, was not able to use great expedition. *Clarendon.*

OUTMEASURE, *v. a.* Out and measure. To exceed in measure.

The present age hath attempted perpetual motions and engines, and those revolutions might out-last the exemplary mobility, and *out-measure* time itself. *Broome.*

OUTNUMBER, *v. a.* Out and number. To exceed in number.

The ladies came in so great a body to the opera, that they *out-numbered* the enemy. *Addison.*

OUTPARISH, *n. s.* Out and parish. Parish not lying within the walls.

In the greater *outparishes* many of the poorer parishioners, through neglect, do perish for want of some heedful eye to overlook them. *Graunt.*

OUTPART, *n. s.* Out and part. Part remote from the centre or main body.

He is appointed to supply the bishop's jurisdiction and other judicial officers in the *outparts* of his diocese. *Aylife.*

OUTPACE, *v. a.* Out and pace. To outgo; to leave behind.

Orion's speed
Could not *outpace* thee; or the horse Laomedon did breed. *Chapman's Iliads.*

OUTPOUR, *v. a.* Out and pour. To emit; to send forth in a stream.

He looked and saw what number, numberless
The city gates *out-poured*; light arm'd troops
In coats of mail and military pride. *Milton.*

OUTPRIZE, *v. a.* Out and prize. To exceed in the value set upon it.

Either your unparagoned mistress is dead, or
She's *outprized* by a trifle. *Shakspeare. Cymbeline.*

OUTRAGE, *n. s., v. a. & v. a.* *Fr. outrage; Ital. oltraggie;*
OUTRAGEOUS, *adj.*
OUTRAGEOUSLY, *adv.*
OUTRAGEOUSNESS, *n. s.*

barb. Lat. ultragium. Extreme or utmost rage; open violence; tumult: to injure or insult violently; commit exorbitancies or extravagancies; the adjective, adverb, and substantive following take the senses of outrage.

Ah heavens! that do this hideous act behold,
And heavenly virgin thus *outraged* see;
How can the vengeance just so long withhold! *Spenser.*

He wrought great *outrages*, wasting all the country where he went. *Spenser on Ireland.*

As she went, her tongue did walk
In foul reproach and terms of vile despight,
Provoking him by her *outrageous* talk,
To heap more vengeance on that wretched wight. *Spenser.*

That people will have colour of employment given them, by which they will poll and spoil so *outrageously*, as the very enemy cannot do worse. *Id. on Ireland.*

Three or four great ones in court will *outrage* in apparel, huge hose, monstrous hats, and garish colours. *Ancham.*

In that beastly fury
He has been known to commit *outrage*,
And cherish factions. *Shakspeare. Timon.*

Think not, although in writing I preferred
The manner of thy vile *outrageous* crimes,
That therefore I have forged. *Shakspeare.*

Under him they committed divers the most *outrageous* villanies, that a base multitude can imagine. *Sidary.*

The news put divers young bloods into such a fury as the English ambassadors were not without peril to be *outraged*. Bacon.

They viewed the vast immeasurable abyss, *Outragious* as a sea, dark, wasteful, wild. Milton.
My characters of Antony and Cleopatra, though they are favourable to them, have nothing of *outrageous* panegyric. Dryden.

When he knew his rival freed and gone,
He swells with wrath; he makes *outrageous* moan;
He frets, he fumes, he stares, he stamps the ground;
The hollow tower with clamours rings around. Id.

Virgil, more discreet than Homer, has contented himself with the partiality of his deities, without bringing them to the *outrageousness* of blows. Id.

Let lust burn never so *outrageously* for the present, yet age will in time chill those heats. South.

Base and insolent minds *outrage* men, when they have hopes of doing it without a return. Atterbury.

This interview *outrages* all decency; she forgets her modesty, and betrays her virtue, by giving too long an audience. Broome.

See with what *outrage* from the frosty north,
The early valiant Swede draws forth his wings
In battalious array. Philips.

Mercy to him that shows it, is the rule
And righteous limitation of its act,
By which Heaven moves in pardoning guilty man;
And he that shows none, being ripe in years,
And conscious of the *outrage* he commits,
Shall seek it, and not find it, in his turn. Cowper.

OUTRAM, or **OWTRAM** (William), D.D., a divine of the established church, was born in Derbyshire in 1625, and educated at Cambridge. After various promotions, he was collated to the archdeaconry of Leicester, and installed prebendary of St. Peter's church in Westminster. He was also rector of St. Margaret's, in the same city. He died in 1679, celebrated for his rabbinical learning, and his acquaintance with the Fathers of the church. His works are, *De Sacrificiis Libri duo; quorum altero explicantur omnia Judæorum, et nonnulla Gentium profanarum sacrificia; altero Sacrificium Christi, &c.*, recently translated by Mr. Allen; Twenty Sermons preached upon different Occasions.

OUTREACH, *v. a.* Out and reach. To go beyond.

This usage is derived from so many descents of ages, that the cause and author *outraches* remembrance. Carew.

Our forefathers could never dream so high a crime as parricide, whereas this *outraches* that fact, and exceeds the regular distinctions of murder. Browne.

OUTRIDE, *v. a.* Out and ride. To pass by riding.

This advantage age from youth hath won,
As not to be *outridden*, though outrun. Dryden.

OUT-RIDER, *n. s.* Out and rider. A summoner whose office is to cite men before the sheriff.

OUTRIGHT, *adv.* Out and right. Immediately; without delay; completely.

When these wretches had the ropes about their necks, the first was to be pardoned, the last hanged *outright*. Arbuthnot.

By degrees accomplished in the beast,
He neighed *outright*, and all the steed exprest. Addison.

OUTROAR, *v. a.* Out and roar. To exceed in roaring.

O that I were
Upon the hill of Basan, to *outrouare*
The horned herd!

Shakspeare. Antony and Cleopatra.

OUTRODE, *n. s.* Out and rode. Excursion.

He set horsemen and footmen, to the end that, issuing out, they might make *outrodes* upon the ways of Judea. 1 Maccabees xv. 41.

OUTROOT, *v. a.* Out and root. To extirpate; to eradicate.

Pernicious discord seems
Outrooted from our more than iron age;
Since none, not even our kings, approach their temples

With any mark of war's destructive rage,
But sacrifice unarmed.

Rowe's Ambitious Step-Mother.

OUTRUN, *v. a.* Out and run. To leave behind in running; to exceed.

By giving the house of Lancaster leave to breathe, It will *outrun* you, father, in the end. Shakspeare.

The expedition of my violent love

Outruns the pauser reason. Id. Macbeth.

We may *outrun*,

By violent swiftness, that which we run at.

Shakspeare.

When things are come to the execution, there is no secrecy comparable to celerity, like the motion of a bullet in the air, which flieth so swift as it *outruns* the eye. Bacon.

This advantage age from youth hath won,

As not to be *outridden*, though *outrun*. Dryden.

We *outrun* the present income, as not doubting to reimburse ourselves out of the profits of some future project. Addison.

OUTSAIL, *v. a.* Out and sail. To leave behind in sailing.

The word signifies a ship that *outsails* other ships.

Broome.

OUTSCAPE, *n. s.* Out and scape. Power of escaping.

It past

Our powers to lift aside a log so vast,

As barred all *outscape*. Chapman.

OUTSCORN, *v. a.* Out and scorn. To bear down or confront by contempt; to despise; not to mind.

He strives in his little world of man t' *outscorn*
The to and fro conflicting wind and rain.

Shakspeare.

OUTSELL, *v. a.* Out and sell. To exceed in the price for which a thing is sold; to sell at a higher rate than another.

It would soon improve to such a height as to *oussel* our neighbours, and thereby advance the proportion of our exported commodities. Temple.

Her pretty action did *oussel* her gift;

And yet enriched it too.

Shakspeare. Cymbeline.

OUTSHINE, *v. a.* Out and shine. To emit lustre; to excel in lustre.

Witness my son, now in the shade of death;
Whose bright *outshining* beams thy cloudy wrath
Hath in eternal darkness folded up. Shakspeare.

By Shakspeare's, Jonson's, Fletcher's lines,

Our stage's lustre, Rome's *outshines*. Denham.

Beauty and greatness are so eminently joined in your royal highness, that it were not easy for any but a poet to determine which of them *outshines* the other. Dryden.

Homer does not only *outshine* all other poets in the variety, but also in the novelty of his characters.

Addison.

We should see such as would *outshine* the rebellious part of their fellow-subjects, as much in their gallantry as in their cause.

Id.

Such accounts are a tribute due to the memory of those only who have *outshone* the rest of the world by their rank as well as their virtues.

Atterbury.

Happy you!

Whose charms as far all other nymphs *outshine*,

As others' gardens are excelled by thine. *Pope.*

OUTSHOOT', v. a. Out and shoot. To exceed in shooting.

The forward youth

Will learn t' *outshoot* you in your proper bow.

Dryden.

Men are resolved never to *outshoot* their forefather's mark; but write one after another, and so the dance goes round in a circle.

Norris.

OUTSIDE, n. s. Out and side. Superficies; surface; external part; superficial appearance; extreme part; the part beyond.

You shall find his vanities forespent

Were but the *outside* of the Roman Brutus

Covering discretion with a coat of folly.

Shakespeare.

Fortune forbid, my *outside* have not charmed her!

Id.

Your *outside* promiseth as much as can be expected from a gentleman.

Bacon.

Hold an arrow in a flame for the space of ten pulses, and, when it cometh forth, those parts which were on the *outsides* of the flame are blacked and turned into a coal.

Id.

What admiest thou, what transports thee so?

An *outside*? fair, no doubt, and worthy well

Thy cherishing and thy love.

Milton.

What pity that so exquisite an *outside* of a head should not have one grain of sense in it.

L'Estrange.

The leathern *outside*, boisterous as it was,

Gave way and bent.

Dryden.

The ornaments of conversation, and the *outside* of fashionable manners, will come in their due time.

Locke.

Created beings see nothing but our *outside*, and can therefore only frame a judgment of us from our exterior actions.

Addison's Spectator.

I threw open the door of my chamber, and found the family standing on the *outside*.

Id.

Two hundred load upon an acre, they reckon the *outside* of what is to be laid.

Mortimer.

OUTSIT', v. a. Out and sit. To sit beyond the time of any thing.

He that prolongs his meals and sacrifices his time, as well as his other conveniences, to his luxury, how quickly does he *outsit* his pleasure!

South.

OUTSLEEP', v. a. Out and sleep. To sleep beyond.

Lovers, to bed; 'tis almost fairy time:

I fear we shall *outsleep* the coming morn.

Shakespeare.

OUTSPEAK', v. a. Out and speak. To speak something beyond; to exceed.

Rich stuffs and ornaments of household

I find at such proud rate, that it *outspeaks*

Possession of a subject.

Shakespeare. Henry VIII.

OUTSPORT', v. a. Out and sport. To sport beyond.

Let's teach ourselves that honourable stop
Not to *outsport* discretion. *Shakespeare. Othello.*

OUTSPREAD', v. a. Out and spread. To extend; to diffuse.

With sails *outspread* we fly.

Pope.

OUTSTAND', v. a. Out and stand. To support; to resist.

Each could demolish the other's work with ease enough, but not a man of them tolerably defend his own; which was sure never to *outstand* the first attack that was made.

Woodward.

I have *outstood* my time, which is material
To the tender of our present.

Shakespeare. Cymbeline.

OUTSTARE', v. a. Out and stare. To face down; to brow-beat; to out-face with effrontery.

I would *outstare* the sternest eyes that look,
To win thee, lady.

Shakespeare. Merchant of Venice.

These curtained windows, this self-prisoned eye,
Outstares the lids of large-look't tyranny.

Crashaw.

OUTSTREET, n. s. Out and street. Street in the extremities of a town.

OUTSTRETCH', v. a. Out and stretch. To extend; to spread out.

Make him stand upon the mole-hill,
That caught at mountains with *out-stretched* arms.

Shakespeare.

Out-stretched he lay on the cold ground, and oft
Cursed his creation.

Milton's Paradise Lost.

A mountain, at whose verdant feet

A spacious plain, *out-stretched*, in circuit wide

Lay pleasant.

Id. Paradise Regained.

Does Theseus burn?

And must not she with *out-stretched* arms receive
him?

And with as equal ardour meet his vows? *Smith.*

OUTSTRIP', v. a. According to Skinner, out and Germ. *spritzen*, to spout. To outgo; leave behind.

If thou wilt *out-strip* death, go across the seas,
And live with Richmond from the reach of hell.

Shakespeare.

Do not smile at me, that I boast her off;

For thou shalt find, she will *out-strip* all praise.

And make it halt behind her.

Id. Tempest.

Thou both their graces in thyself hast more
Out-striped, than they did all that went before.

Ben Jonson.

My soul, more earnestly released,
Will *out-strip* hers; as bullets flown before

A later bullet may o'ertake, the powder being more.

Donne.

With such array Harpalice bestrode
Her Thracian courser, and *out-strip*'d the rapid flood.

Dryden.

A fox may be out-witted, and a hare out-strip.

L'Estrange.

He got the start of them in point of obedience,
and thereby *out-striped* them at length in point of knowledge.

South.

OUT-SWEETEN, v. a. Out and sweeten. To excel in sweetness.

The leaf of eglantine, which not to slander,
Out-sweetened not thy breath.

Shakespeare. Cymbeline.

OUT-SWEAR', v. a. Out and swear. To overpower by swearing.

We shall have old swearing,
But we'll out-face them, and *out-swear* them too.

Shakespeare.

OUT-TONGUE, *v. a.* Out and tongue. To bear down by noise.

Let him do his spite :

My services, which I have done the signory,
Shall *out-tongue* his complaints. *Shakespeare.*

OUT-TALK, *v. a.* Out and talk. To overpower by talk.

This gentleman will *out-talk* us all. *Shakespeare.*

OUT-VALUE, *v. a.* Out and value. To transcend in price.

He gives us in this life an earliest of expected joys,
that *out-values* and transcends all those momentary pleasures it requires us to forsake. *Boyle.*

OUT-VENOM, *v. a.* Out and venom. To exceed in poison.

'Tis slander;

Whose edge is sharper than the sword, whose tongue

Out-venoms all the worms of Nile. *Shakespeare.*

OUTVIE, *v. a.* Out and vie. To exceed; to surpass.

For folded flocks, or fruitful plains,

Fair Britain all the world *outvies*. *Dryden.*

One of these petty sovereigns will be still endeavouring to equal the pomp of greater princes, as well as to *out-vie* those of his own rank. *Addison.*

OUT-VIL'AIN, *v. a.* Out and villain. To exceed in villany.

He hath *out-villained* villainy so far, that the rarity redeems him. *Shakespeare.*

OUT-VOICE, *v. a.* Out and voice. To out-
-roar; to exceed in clamor.

The English beach

Pales in the flood with men, with wives and boys,
Whose shouts and claps *out-voice* the deep-mouthed sea. *Shakespeare.*

OUT-VOTE, *v. a.* Out and vote. To conquer by plurality of suffrages.

They were *out-voted* by other sects of philosophers, neither for fame nor number less than themselves.

South.

OUT-WALK, *v. a.* Out and walk. To leave one in walking.

OUT-WALL, *n. s.* Out and wall. Outward part of a building; superficial appearance.

For confirmation that I am much more

Than my *out-wall*, open this purse, and take
What it contains. *Shakespeare. King Lear.*

OUT-WEED, *v. a.* Out and weed. To extirpate as a weed.

Wrath is a fire, and jealousy a weed;

The sparks soon quench, the springing weed *out-weed*. *Spenser.*

OUTWEIGH, *v. a.* Out and weigh. To exceed in gravity, or excel in influence.

If any think brave death *out-weighs* bad life,
Let him express his disposition. *Shakespeare.*

These instruments require so much strength for the supporting of the weight to be moved, as may be equal unto it, besides that other super-added power whereby it is *out-weighed* and moved. *Wilk.*

All your care is for your prince I see,

Your truth to him *out-weighs* your love to me.

Dryden.

Whenever he finds the hardship of his slavery *out-weight* the value of his life, it is in his power, by resisting the will of his master, to draw on himself the death he desires. *Locke.*

The marriage of the clergy is attended with the poverty of some of them, which is balanced and *out-weighted* by many single advantages. *Atterbury.*

OUT-WELL, *v. a.* Out and well. To pour out. Not in use.

As when old father Nilus 'gins to swell,
With timely pride about the Egyptian vale,
His fattie waves do fertile slime *out-well*,
And overflow each plain and lowly dale. *Spenser.*

OUTWIT, *v. a.* Out and wit. To cheat; to overcome by stratagem.

Justice forbids defrauding, or going beyond our brother in any manner, when we can over-reach and *out-wit* him in the same. *Kettlevell.*

After the death of Crassus, Pompey found himself *out witted* by Cæsar, and broke with him. *Dryden.*

The truer hearted any man is, the more liable he is to be imposed on; and then the world calls it *out-witting* a man, when he is only out-knaved.

L' Estrange.

Nothing is more equal in justice, and indeed more natural in the direct consequence of effects and causes, than for men wickedly wise to *out-wit* themselves; and for such as wrestle with Providence, to trip up their own heels. *South.*

OUTWORK, *n. s.* Out and work. The parts of a fortification next the enemy.

Take care of our *out-work*, the navy royal, which are the walls of the kingdom; and every great ship is an impregnable fort; and our many safe and commodious ports as the redoubts to secure them.

Bacon.

Death hath taken in the *out-works*,

And now assails the fort; I feel, I feel him

Gnawing my heart-strings. *Denham.*

OUTWORN, *part.* From out-wear. Consumed or destroyed by use.

Better at home lie bed-rid, idle,

Inglorious, unemployed, with age *out-worn*.

Milton.

OUTWREST, *v. a.* Out and wrest. To extort by violence.

The growing anguish

Rankled so sore and feasted inwardly,

Till that the truth thereof I did *out-wrest*.

Spenser.

OUTWROUGHT, *part.* Out and wrought. Out-done: exceeded in efficacy.

In your violent acts,

The fall of torrents and the noise of tempests,

The boiling of Charybdis, the sea's wildness,

The eating force of flames, and wings of winds,

Be all *out-wrought* by your transcendent furies.

Ben Jonson.

OUTWORTH, *v. a.* Out and worth. To excel in value.

A beggar's book

Out-worths a noble's blood.

Shakespeare. Henry VIII.

OWE, *v. a.* } Sax. *ahan*; Goth. *aga*; Isl.

OWING, *part.* } *eg.* To have or be obliged to pay; to be indebted; to be obliged for; hence to have, as from a cause; possess: owing, consequential; imputable to; and, in a passive but improper sense, due as a debt.

I *owe* you much, and, like a witless youth,

That which I *owe* is lost.

Shakespeare. Merchant of Venice.

Not poppy nor mandragora,

Nor all the drowsy syrups of the world,

Shall ever med'cine thee to that sweet sleep

Which thou *owed'st* yesterday. *Id. Othello.*

If any happy eye

This roving wanton shall descry,

Let the finder surely know
 Mine is the wag; 'tis I that owe
 The winged wanderer. *Crashaw.*
 By me upheld, that he may know how frail
 His fallen condition is, and to me owe
 All his deliverance, and to none but me. *Milton.*
 All your parts of pious duty done,
 You owe your Ormond nothing but a son. *Dryden.*
 You are both too bold;
 I'll teach you all what's owing to your queen. *Id.*
 If, upon the general balance of trade, English
 merchants owe to foreigners one hundred thousand
 pounds, if commodities do not, our money must go
 out to pay it. *Locke.*
 The debt, *owing*, from one country to the other,
 cannot be paid without real effects sent thither to
 that value. *Id.*
 If we estimate things, what in them is *owing* to
 nature, and what to labour, we shall find in most of
 them $\frac{2}{3}$ to be on the account of labour. *Id.*
 A son owes help and honor to his father; and is a
 subject less indebted to the king? *Holyday.*
 This was *owing* to an indifference to the pleasures
 of life, and an aversion to the pomps of it. *Atterbury.*
 O deem thy fall not owed to man's decree,
 Jove hated Greece, and punished Greece in thee. *Pope.*
 The custom of particular impeachments was not
 limited any more than that of struggles between
 nobles and commons; the ruin of Greece was *owing*
 to the former, as that of Rome was to the latter. *Swift.*
 But the monarch owes
 His firm stability to what he scorns,
 More fixed below, the more disturbed above. *Cowper.*

For me, who, when I'm happy, owe
 No thanks to fortune that I'm so,
 Who long have learned to look at one
 Dear object, and at one alone. *Sheridan.*
 OWEN (Dr. John), an eminent and learned
 dissenting minister, born in 1616, at Hadham in
 Oxfordshire, of which place his father was vicar.
 At twelve years of age he was admitted into Queen's
 College, Oxford, and in 1635 was made A. M.,
 but soon after, disapproving the new regulations
 made by archbishop Laud, their chancellor, he
 was obliged, in 1637, to leave the university;
 when, taking orders, he became chaplain to Sir
 Robert Dormer of Ascot, in Oxfordshire, and
 tutor to his eldest son. He was afterwards chap-
 lain to John lord Lovelace of Hurley, in Berk-
 shire. When the civil war broke out, he openly
 avowed the cause of the parliament, which caused
 his uncle to disinherit him. When lord Love-
 lace joined the royal army, Mr. Owen went to
 London, and soon after joined the non-conform-
 ists. The earl of Warwick gave Mr. Owen the
 living of Coggeshall; where he soon left the Pres-
 byterians, and formed a church of Independents.
 He was now sent for several times to preach
 before the parliament; and Cromwell was so
 pleased with him that he took him to Ireland,
 where he remained about half a year. Soon
 after Cromwell sent him into Scotland; but he
 also returned thence after about half a year's
 stay at Edinburgh. He was then promoted to
 the deanery of Christ Church, Oxford, whither
 he went in 1651; and Cromwell, being now
 chancellor of the University, nominated him his
 vice-chancellor. The next year he was created

D. D. Dr. Owen enjoyed the post of vice-chancellor five years; during which he behaved with the greatest moderation to the royalists. At the death of Cromwell, he was removed from the vice-chancellorship; and at the Restoration was ejected from his deanery of Christ Church, when he retired to an estate he had purchased at Hadham. Lord Clarendon afterwards offered to prefer him if he would conform, but he declined. He died at Ealing in 1683. His works are printed in 7 vols. folio.

OWEN, (William), R.A., an English artist of considerable reputation, was a native of Shropshire, and born in 1769. He was educated at the grammar-school, Ludlow, where his passionate love of painting attracted the notice of Mr. Payne Knight. By the advice and assistance of that liberal patron he was sent to London, and placed under Charles Catton; he made an excellent copy of one of Sir Joshua Reynolds's portraits, in consequence of which that great painter paid him much attention; and, after some slight pecuniary difficulties, settled, in 1800, at Pimlico. In 1813 our artist was appointed principal portrait painter to the prince regent, on which occasion he was offered, but declined, the honor of knighthood. His professional emoluments, as well as his reputation, continuing to increase, he in 1818 removed to an establishment in Bruton Street, but from this time his health abandoned him; and, although he survived till the February of 1824, yet, during the five last years of his life, he could only bear to be wheeled from his bed-room to his drawing-room. His disease was immediately occasioned by the carelessness of a chemist's apprentice, who, mixing up for his use a cathartic, and a preparation of opium, known by the name of 'Battley's Drops,' transposed the labels of the phials. The whole contents of the one, containing the latter, were in consequence swallowed, and the patient fell into a lethargy that proved fatal. Among his historical pieces, his Blind Beggar of Bethnal Green; The Village Schoolmistress; and Road Side, have been engraved, and are very popular. He was enrolled among the members of the Royal Academy in the spring of 1806.

OWEN (John), an excellent epigrammatist, born in Caernarvonshire, and educated at Winchester, and at New College, Oxford, where he took his degree of L.L.B. He became schoolmaster at Tryleigh, and afterwards at Warwick. His Latin Epigrams, Joannis Audoeni Epigrammata, were much esteemed, both at home and abroad, and went through many editions and translations. He died in 1622.

OWEN (Henry), a learned divine, born in 1715, in Monmouthshire, and educated first at Ruthin, and next at Jesus College, Oxford, where he took the degree of M.D. He afterwards entered into orders, and became vicar of Edmonton, in Middlesex, and St. Olaves, London. His works are, 1. Observations on Scripture Miracles; 2. Remarks on the four Gospels; 3. Enquiry into the LXX. Version; 4. Sermons preached at Boyle's Lecture; 5. Introduction to Hebrew Criticism; 6. Modes of Quotation used by the Evangelists; 7. Sermons, 2 vols. He died in 1795, aged eighty.

OWEN (Thomas), a judge of the common pleas, son of Richard Owen, esq., of Conover in Shropshire. He was educated at Oxford; and, having taken his degree of A. M., he left the university, and entered himself of Lincoln's Inn in London, where he became an eminent counselor. In 1583 he was elected Lent reader to that society. In 1590 he was made serjeant at law, and queen's serjeant soon after. In 1593 he was made judge of the common-pleas; which office he executed with great abilities and integrity. He died in 1598, and was buried in Westminster Abbey, where a monument was erected to his memory. He was a learned man, and a patron of literature. He was the author of Reports in the Common Pleas, London, 1656, folio.

OWEN (John), M.A., a modern divine, one of the earliest members and long the Church of England's secretary of the Bible Society, was educated at Corpus Christi College, Cambridge, where he obtained a fellowship, and proceeded to the degree of master of arts. In 1791 he travelled through Europe, with a pupil, and on his return published an amusing account of his tour, in two volumes octavo. After this he became curate of Fulham, where his exertions procured him the patronage of bishop Porteus, who gave him the living of Paglesham, in Essex. But Dr. Randolph, the successor of that prelate, insisted upon Mr. Owen's residence at his rectory, by which he was obliged to relinquish the curacy of Fulham; when the inhabitants presented him with a purse of nearly £700. He died September 26th, 1822. His other works, besides tracts and sermons, are, *The Retrospect, or Reflections on the State of Religion and Politics in France and Great Britain*, 8vo.; *The Christian Monitor for the Last Days*, 8vo.; *Vindication of the Bible Society*, 8vo.; *History of the same*, 4 vols. 8vo.

OWHYHEE, the easternmost, and by far the largest, of the Sandwich Islands. It is of a triangular shape. The angular points make the north-east and south extremities, of which the northern is in long. $204^{\circ} 2' E.$, lat. $20^{\circ} 17' N.$; the eastern in long. $205^{\circ} 6' E.$, lat. $19^{\circ} 34' N.$; and the southern extremity in long. $204^{\circ} 15' E.$, lat. $18^{\circ} 54' N.$ Its greatest length, which lies in a direction nearly north and south, is eighty-five miles; its breadth is seventy-two miles; and it is about 255 geographical, or 293 English, miles in circumference. It is divided into six large districts; two of which, on the north-east side, are separated by a mountain that rises in three peaks, which are perpetually covered with snow, and may be seen clearly at forty leagues distance. To the north of this mountain the coast consists of high and steep cliffs, down which fall many beautiful cascades. The whole country is covered with cocoa-nut and bread-fruit trees. The peaks of the mountains on the north-east side are about half a mile in height, and entirely covered with snow. To the south of this mountain the coast presents a prospect of the most dreary kind, the whole country appearing to have undergone a total change by some dreadful convulsion. Among the plantations are a few huts, for shelter to the laborers; but there are no villages at a greater distance from the sea than four or five

miles. There are supposed to be on this island above 100,000 inhabitants. The men are above the middle size, stout, well made, and fleshy, but not fat. Their color is brown olive. The women are in general masculine, though there are some exceptions. The features of both sexes are good; and some of the females are really fine women. They are very healthy, and some live to a great age. They are all thieves, without exception. The custom of tattooing prevails greatly among them; but the men have a much larger share of it than the women. Both men and women are very cleanly in their persons; the latter wash their whole bodies in fresh water twice, and sometimes three times, a-day. They are extremely lascivious. Their clothing consists of cloth of different kinds: that worn by the men, which is called marro, is about half a yard wide, and four yards long; that of the women, three-quarters of a yard wide, and of the same length as the men's: thus they call pah-o-ouwa; they both wear it round their middle, but the men pass it between their legs. This is the general dress of both sexes; but the better sort sometimes throw a large piece loosely over their shoulders. Besides the marro, they have several other kinds of cloth; all, however, are made from the Chinese paper mulberry tree. The principal of these is the cappa, which is about ten or twelve feet long, and nearly as many wide, and is thick and warm; they wrap themselves up in this when they retire to sleep. They have another kind, which is white, and much thinner; it is sometimes twenty or thirty yards long, and wide in proportion. The marro and pah-o-ouwa are curiously painted of various patterns; but the others are generally white, or dyed red, black, and yellow. The principal ornaments of the men are feather-caps and cloaks. They have also a kind of fly-flap, made of a bunch of feathers, fixed to the end of a thin piece of smooth and polished wood. The handle is very frequently made of one of the bones of the arm or leg of those whom they have killed in battle, curiously inlaid with tortoise-shell: these they deem very valuable, and will not part with them under a great price. This ornament is common to the superiors of both sexes. The ornament which the women value most is the orai. This is a kind of ruff or necklace, made of red, green, black, and yellow feathers, curiously put together, and in most elegant patterns. Others are composed of small variegated shells; and some consist of several rows of twisted hair, with a piece of carved wood or bone, highly polished, the bottom part forming a curve. They have also the poo-remah or bracelet; the most valuable of which are made of boars' tusks, fastened together side by side with a piece of string, by means of a hole drilled through the middle.

In 1794 this island was ceded by the king and his chiefs to Great Britain. Mr. Puget, lieutenant of the Discovery, accompanied by some of the officers, went on shore, there displayed the British colors, and took possession of the island in his majesty's name, in conformity to the inclinations of Tamahmah and his subjects. On this ceremony being finished, a salute was fired

from the vessels: after which the following inscription on copper was deposited in a very conspicuous place at the royal residence:—‘On the 25th of February 1794, Tamaahmaah, king of Owhyhee, in council with the principal chiefs of the island, assembled on board his Britannic majesty’s sloop *Discovery*, in Karakakooa Bay, and in presence of George Vancouver, commander of the said sloop; lieutenant Peter Puget, commander of his said majesty’s armed tender the *Chatham*; and the other officers of the *Discovery*, after due consideration, unanimously ceded the said island of Owhyhee to his Britannic majesty, and acknowledged themselves to be subjects of Great Britain.’ On this island the celebrated captain Cook fell a sacrifice to a misunderstanding, or sudden impulse of revenge, in the natives, on Sunday the 14th of February, 1779.

Since captain Cook discovered these islands, an astonishingly rapid civilisation has taken place amongst the natives, by their intercourse with Europeans. In 1791 captain Vancouver laid down the keel, and prepared the frame-work, of a vessel for the king, whose size was thirty-six feet by nine and a quarter. Ten years after, this chief had increased his navy to twenty vessels of different sizes, from twenty-five to fifty tons, and some of them coppered, chiefly built by Americans. In 1805 his largest vessel was seventy tons, and he was well supplied with naval stores. His people, from making frequent voyages to the north-west coast of America, and in the South Sea whalers, have become expert seamen, and they talk of opening a direct trade in their own vessels with China; the island producing pearls, pearl-shell, and sandal-wood, all valuable in the China market. The king has a fortification round his house, mounting ten guns; and a guard of 200 native soldiers, well disciplined, and perfect in the use of fire-arms, who do regular duty night and day. He has, besides, 2000 stand of arms, and upwards of 12,000 Spanish dollars, together with other valuable articles, which he has collected in trade, and deposited in regular store-houses. Some horned cattle left at Owhyhee by Vancouver have greatly multiplied.

OWL, *n. s.* } Sax. *ule*; Dan. *ugle*; Sans. Owl’er. } *ooloo*; Lat. *uhula*. (All, perhaps, from the noise of the bird). A well-known bird of night.

Return to her!

No! rather I abjure all roofs, and chuse
To be a comrade with the wolf and owl.

Shakespeare.

’Twas when the dog-star’s unpropitious ray
Smote every brain, and withered every bay;
Sick was the sun, the owl forsook his bower.

Dunciad.

Then lady Cynthia, mistress of the shade,
Goes, with the fashionable owl, to bed. *Young.*

The night (I sing by night—sometimes an owl,
And now and then a nightingale)—is dim,
And the loud shriek of sage Mitherva’s fowl
Rattles around me her discordant hymn. *Byron.*

OWL, in ornithology. See STRIX.

OWL’ER, *n. s.* Supposed to be corrupted from wooller. A contraband dealer in wool.

We understand by some *owlers*, old people die in France.

By running goods, these graceless *owlers* gain. *Taiter.*

Swift.

OWLING, so called from its being usually carried on in the night, is the offence of transporting wool or sheep out of this kingdom, to the detriment of its staple manufacture. This was forbidden at common law, particularly by stat. 11 Edw. III. c. 1, when the importance of our woollen manufacture was first attended to; and there are now many later statutes relating to this offence, the principal of which are those enacted in the reign of queen Elizabeth, and since. The stat. 8 Eliz. c. 3, makes the transportation of live sheep, or embarking them on board any ship, for the first offence, forfeiture of goods, and imprisonment for a year, and that at the end of the year the left hand shall be cut off in some public market, and shall be there nailed up in the openest place; and the second offence is felony. The statutes 12 Car. II. c. 32, and 7 & 8 Will. III. c. 28, make the exportation of wool, sheep, or fullers’ earth, liable to pecuniary penalties, and the forfeiture of the interest of the ship and cargo by the owners, if privy; and confiscation of goods, and three years’ imprisonment to the master and all the mariners. And the statute 4 Geo. I. c. 11 (amended and farther enforced by 12 Geo. II. c. 21, and 19 Geo. II. c. 34) makes it transportation for seven years, if the penalties be not paid.

OWN, *n. s.* & *v. a.* } Sax. *agan*; Goth. *aga*, OWN’ER, } *aihn* (property). Now OWN’ERSHIP. } used as an emphatical addition to personal pronouns, as ‘my own,’ ‘his own,’ &c., meaning his property or possession. See OWE. Also denoting domestic as distinguished from foreign; mine; or his; yours: to own is to claim as property: hence to avow or avouch; confess: owner is he who owns or possesses; rightful possession: ownership, right of property or possession.

Every nation made gods of their own, and put them in high places. *2 Kings*, xvii. 29.

I yet never was forsworn,
Scarce have coveted what was my own.

Shakespeare.

It is not enough to break into my garden,
Climbing my walls in spite of me the owner,
But thou wilt brave me. *Id.*

Here shew favour, because it happeneth that the owner hath incurred the forfeiture of eight years’ profit of his lands, before he cometh to the knowledge of the process against him. *Bacon.*

They intend advantage of my labours,
With no small profit daily to my owners.

Milton.

These toils abroad, these tumults with his own,
Fell in the revolution of one year. *Daniel.*

Nor hath it been thus only amongst the more civilized nations; but the barbarous Indians likewise have owned that tradition. *Wilkin.*

Make this truth so evident that those who are unwilling to own it may yet be ashamed to deny it. *Tillotson.*

I’ll venture out alone,
Since you, fair princess, my protection own. *Dryden.*

Tell me, ye Trojans, for that name you own,
Nor is your course upon our coasts unknown. *Id.*

These wait the *owners* last despair,
And what's permitted to the flames invade. *Id.*
There's nothing sillier than a crafty knave out-
witted, and beaten at his *own* play. *L'Estrange.*
It is conceit rather than understanding, if it must
be under the restraint of receiving and holding opi-
nions by the authority of any thing but their *own*
perceived evidence. *Locke.*

Others will *own* their weakness of understanding.
Id.

In a real action, the proximate cause is the pro-
perty or *ownership* of the thing in controversy.

Ayliffe's Paregon.

That small muscle draws the nose upwards, when
it expresses the contempt which the *owner* of it has
upon seeing any thing he does not like. *Addison.*

It must be *owned*, that, generally speaking, good
parents are never more fond of their daughters, than
when they see them too fond of themselves. *Lau.*

Victory hath not made us insolent, nor have we
taken advantage to gain any thing beyond the honour
of restoring every one's right to their just *owners*.

Atterbury.

Passion and pride were to her soul unknown,
Convinced that virtue only is our *own*. *Pope.*

Others on earth o'er human race preside,
Of these the chief, the care of nations *own*,
And guard with arms divine the British throne. *Id.*

What is this wit, which must our cares employ ?
The *owner's* wife, that other men enjoy. *Id.*

For he that wrote so much, and so fast, would
through inadvertence and hurry, unavoidably have
departed from rules which he might have found in
books : but his *own* truly poetical talent was a guide
which could not suffer him to err. *Cowper.*

But, by each joy of his I've known,
And all I yet shall make my *own*,
Never will I, with humble speech,
Pray to a heaven I cannot reach. *Sheridan.*

Then how, my soul, can we be poor,
Who *own* what kingdoms could not buy ?
Of this true heart thou shalt be queen,

And, serving thee, a monarch I. *Id.*

The patient Sculptor *owns* an humbler part,
A ruder toil, and more mechanic art ;
Content with slow and timorous stroke to trace
The lingering line, and mould the tardy grace. *Id.*

But Virtue's self, with all her tightest laces,
Has not the natural stays of strict old age ;
And Socrates, that model of all duty,
Owned to a penchant, though discreet, for beauty. *Byron.*

Adeline, no deep judge of character,
Was apt to add a colouring from her *own*.

'Tis thus the good will amiably err,
And eke the wise, as has been often shown. *Id.*

France at our doors, he sees no danger nigh,
But heaves for Turkey's woes the 'impartial sigh ;
A steady patriot of the world alone,
The friend of every country—but his *own*.

Canning.

OX, *n. s.* ? Plural OXEN. Sax. *oxa* ; Goth.
OXANG. } Dan. and Swed. *oxe* ; Teut. *ochg* ;
Welsh *ych*. A castrated bull : a general name
for black cattle : an oxgang was an ancient mea-
sure of land, containing twenty acres.

Sheep run not half so tim'rous from the wolf,
Or horse or *oxen* from the leopard,
As you fly from your oft-subdued slaves. *Shakspeare.*

The black *ox* hath not trod on his foot. *Camden.*

The horns of *oxen* and cows are larger than the
bulls ; which is caused by abundance of moisture.

Bacon.

Although there be naturally more males than fe-
males, yet artificially, that is, by making geldings,
oxen, and wethers, there are fewer. *Graunt.*

The field is spacious I design to sow,

With *oxen* far unfit to draw the plough. *Dryden.*

I saw the river Clitumnus, celebrated by the poets
for making cattle white that drink of it. The in-
habitants of that country have still the same opinion,
and have a great many *oxen* of a whitish colour to
confirm them in it. *Addison.*

The frowning bull

And *ox* half-raised. *Thomson's Summer.*

Ox. See Bos.

OXALIC ACID, in chemistry, which abounds
in wood sorrel, and which, combined with a
small portion of potash, as it exists in that plant,
has been sold under the name of salt of lemons,
to be used as a substitute for the juice of that
fruit, particularly for discharging ink spots and
iron-moulds, was long supposed to be analogous
to that of tartar. In the year 1776, however,
Bergman discovered that a powerful acid might
be extracted from sugar by means of the nitric ;
and a few years afterwards Scheele found this to
be identical with the acid existing naturally in
sorrel. Hence the acid began to be distinguished
by the name of saccharine ; but has since been
known in the new nomenclature by that of
oxalic.

Scheele extracted this acid from the salt of
sorrel, or acidulous oxalate of potash, as it exists
in the juice of that plant, by saturating it with
ammonia, when it becomes a very soluble triple
salt, and adding to the solution nitrate of barytes
dissolved in water. Having well washed the
oxalate of barytes, which is precipitated, he dis-
solved it in boiling water, and precipitated its
base by sulphuric acid. To ascertain that no
sulphuric acid remained in the supernatant li-
quor, he added a little of a boiling solution of
oxalate of barytes till no precipitate took place,
and then filtered the liquor, which contained
nothing but pure oxalic acid, which he crystal-
lised by evaporation and cooling.

It may be obtained, however, much more re-
adily and economically from sugar in the follow-
ing way :—To six ounces of nitric acid in a
stoppered retort, to which a large receiver is
luted, add, by degrees, one ounce of lump sugar
coarsely powdered. A gentle heat may be ap-
plied during the solution, and nitric oxide will
be evolved in abundance. When the whole of
the sugar is dissolved, distil off a part of the
acid, till what remains in the retort has a syrupy
consistence, and this will form regular crystals,
amounting to fifty-eight parts from 100 of sugar.
These crystals must be dissolved in water, re-
crystallised, and dried on blotting paper.

Oxalate of lime is found in the roots of the
following plants :—Alkana, apium, bistorta, car-
lina acaulis, curcuma, dictamnus albus, fenicu-
lum, gentiana rubra, vincetoxicum, lapathum,
liquiritia, mandragora, ononis, iris Florentina,
iris nostras, rheum, saponaria, scilla, sigillum
salomonis, tormentilla, valeriana, zedoaria, zingi-
ber. And in the following barks :—berberis,
cassia fistularis, canella alba, cinamomum, cas-

cardilla, cassia caryophyllata, china, culilavan, frangula, fraxinus, quassia, quercus, simaruba, lignum sanctum, ulmus. In the state of binoxylate of potash it exists in the leaves of the oxalis acetosella, oxalis corniculata, different species of rumex, and geranium acidum.

The juice of the cicer parietinum is said to be pure oxalic acid. Bergman procured it from honey, gum-arabic, alcohol, and the calculeous concretions in the kidneys and bladders of animals. Scheele and Hermstadt from sugar of milk. Scheele from a sweet matter contained in fat oils, and also from the uncrystallisable part of the juice of lemons. Hermstadt from the acid of cherries, and the acid of tartar. Goettling from beech-wood. Kohl from the residuum in the distillation of ardent spirits. Westrumb, not only from the crystallised acids of currants, cherries, citrons, and raspberries, but also from the saccharine matter of these fruits, and from the uncrystallisable parts of the acid juices. Hoffmann from the juice of the barberry; and Berthollet from silk, hair, tendons, wool; also from other animal substances, especially from the coagulum of blood, whites of eggs, and likewise from the amylaceous and glutinous parts of flour. M. Berthollet observes that the quantity of the oxalic acid obtained by treating wool with nitric acid was very considerable, being above half the weight of the wool employed. He mentions a difference which he observed between animal and vegetable substances thus treated with nitric acid, namely, that the former yielded, beside ammonia, a large quantity of an oil which the nitric acid could not decompose; whereas the oily parts of vegetables were totally destroyed by the action of this acid: and he remarks that in this instance the glutinous part of flour resembled animal substances, whereas the amylaceous part of the flour retained its vegetable properties. He further remarks that the quantity of oxalic acid furnished by vegetable matters thus treated is proportionable to their nutritive quality, and particularly that, from cotton, he could not obtain any sensible quantity. Deyeux, having cut with scissars the hairs of the chick pea, found they gave out an acid liquor, which, on examination, proved to be an aqueous solution of pure oxalic acid. Proust, and other chemists, had before observed that the shoes of persons walking through a field of chick peas were corroded.

Oxalic acid crystallises in quadrilateral prisms, the sides of which are alternately broad and narrow, and summits dihedral; or, if crystallised rapidly, in small irregular needles. They are efflorescent in dry air, but attract a little humidity if it be damp; are soluble in one part of hot and two of cold water; and are decomposable by a red heat, leaving a small quantity of coaly residuum. 100 parts of alcohol take up nearly fifty-six at a boiling heat, but not above forty cold. Their acidity is so great that, when dissolved in 3600 times their weight of water, the solution reddens litmus paper, and is perceptibly acid to the taste.

The oxalic acid is a good test for detecting lime, which it separates from all the other acids, unless they are present in excess. It has like-

wise a greater affinity for lime than for any other of the bases, and forms with it a pulverulent insoluble salt, not decomposable except by fire, and turning syrup of violets green.

From the oxalate of lead Berzelius infers its prime equivalent to be 4.552, and by igneous decomposition he finds it resolved into 66.534 oxygen, 33.222 carbon, and 0.244 hydrogen. Since Berzelius published his analysis, oxalic acid has been made the subject of some ingenious remarks by Dobereiner, in the 16th vol. of Schweigger's Journal. We see that the carbon and oxygen are to each other in the simple ratio of 1 to 2; or, referred to their prime equivalent, as 2 of carbon = 1.5, to 3 of oxygen = 3.0. This proportion is what would result from a prime of carbonic acid = C + 2. O, combined with one of carbonic oxide = C + O. C being carbon, and O oxygen. The sum of the above weights gives 4.5 for the prime equivalent of oxalic acid, disregarding hydrogen, which constitutes but one-thirty-seventh of the whole, and may possibly be referred to the imperfect desiccation of the oxalate of lead subjected to analysis. Oxalic acid acts as a violent poison when swallowed in the quantity of two or three drachms; and several fatal accidents have lately occurred in London, in consequence of its being improperly sold instead of Epsom salts. Its vulgar name of salts, under which the acid is bought for the purpose of whitening boot-tops, occasions these lamentable mistakes. But the powerfully acid taste of the latter substance, joined to its prismatic or needle-formed crystallisation, are sufficient to distinguish it from every thing else. The immediate rejection from the stomach of this acid by an emetic, aided by copious draughts of warm water containing bicarbonate of potash, or soda, chalk, or carbonate of magnesia, are the proper remedies.

With barytes it forms an insoluble salt; but this salt will dissolve in water acidulated with oxalic acid, and afford angular crystals. If, however, we attempt to dissolve these crystals in boiling water, the excess of acid will unite with the water, and leave the oxalate, which will be precipitated.

The oxalate of strontian too is a nearly insoluble compound.

Oxalate of magnesia too is insoluble, unless the acid be in excess.

The oxalate of potash exists in two states, that of a neutral salt, and that of an acidule. The latter is generally obtained from the juice of the leaves of the oxalis acetosella, wood sorrel, or rumex acetosa, common sorrel. The expressed juice, being diluted with water, should be set by for a few days, till the feculent parts have subsided, and the supernatant fluid is become clear; or it may be clarified, when expressed, with the whites of eggs. It is then to be strained off, evaporated to a pellicle, and set in a cool place to crystallise. The first product of crystals being taken out, the liquor may be farther evaporated and crystallised; and the same process repeated till no more can be obtained. In this way, Schlereth informs us, about nine drachms of crystals may be obtained from two pounds of juice, which are generally afforded by ten pounds

of wood sorrel. Savary, however, says that ten parts of wood sorrel, in full vegetation, yield five parts of juice, which give little more than a 200th of tolerably pure salt. He boiled down the juice, however, in the first instance, without clarifying it; and was obliged repeatedly to dissolve and recrystallise the salt to obtain it white.

This salt is in small, white, needle, or lamellar crystals, not alterable in the air. It unites with barytes, magnesia, soda, ammonia, and most of the metallic oxides, into triple salts. Yet its solution precipitates the nitric solutions of mercury and silver in the state of insoluble oxalates of these metals, the nitric acid in this case combining with the potash. It attacks iron, lead, tin, zinc, and antimony.

This salt, beside its use in taking out ink spots, and as a test of lime, forms with sugar and water a pleasant cooling beverage; and, according to Berthollet, it possesses considerable powers as an antiseptic.

The neutral oxalate of potash is very soluble, and assumes a gelatinous form, but may be brought to crystallise in hexahedral prisms with dihedral summits, by adding more potash to the liquor than is sufficient to saturate the acid.

Oxalate of soda likewise exists in two different states, those of an acidulous and a neutral salt, which in their properties are analogous to those of potash.

The acidulous oxalate of ammonia is crystallisable, not very soluble, and capable, like the preceding acidules, of combining with other bases, so as to form triple salts. But, if the acid be saturated with ammonia, we obtain a neutral oxalate, which, on evaporation, yields very fine crystals in tetrahedral prisms with dihedral summits, one of the planes of which cuts off three sides of the prism. This salt is decomposable by fire, which raises from it carbonate of ammonia, and leaves only some slight traces of a coaly residuum. Lime, barytes, and strontian, unite with its acid, and the ammonia flies off in the form of gas.

The oxalic acid readily dissolves alumina, and the solution gives on evaporation a yellowish transparent mass, sweet and a little astringent to the taste, deliquescent, and reddening tincture of litmus, but not syrup of violets. This salt swells up in the fire, loses its acid, and leaves the alumina a little colored.

OXALIS, wood sorrel, a genus of the pentagynia order, and decandria class of plants: natural order fourteenth, grinales: *CAL.* pentaphyllous, the petals connected at the heels: *CAPS.* pentagonal, and opening at the angles. There are seven species; the only remarkable one is

O. acetosella, common wood sorrel. This grows naturally in moist shady woods, and at the sides of hedges in many parts of Britain, and is seldom admitted into gardens. The roots are composed of many scaly joints, which propagate in great plenty. The leaves arise immediately from the roots upon single long footstalks, and are composed of three heart-shaped lobes. They are gratefully acid, and of use in the scurvy and other putrid disorders.

OXFORD, a city of England, the county town of Oxfordshire, and celebrated for its university,

which in the extent and number of its institutions and the wealth of its endowments is unequalled. The city stands on a gentle eminence, in a valley, at the confluence of the Isis and Cherwell, which descending towards the south, and uniting at an acute angle, nearly encompass it. Between these streams and the city, particularly on the south and west, are beautiful and luxuriant meadows; and beyond them the prospect is bounded on the east, south, and west, by an amphitheatre of hills. From these hills the city presents a noble spectacle. It is of an oval form, and was formerly surrounded by a wall, about two miles in circumference, having bastions at 150 feet distant from each other; very little of these works, however, remain. The city and suburbs now include a circuit of three miles, extending in length a mile and a quarter from east to west, and about as much from north to south. The entrances east, south, and west, present bridges crossing the respective rivers.

Magdalen bridge is an elegant stone building over the Cherwell, 526 feet in length, built in 1779, at an expense of £8000. That over the Isis, on the west, consists of three substantial arches. On the south is another over the same river, on which, till lately, stood a lofty tower, termed Friar Bacon's Study. From Magdalen bridge the High-street stretches westwards, under different names, through the whole city. At Quarte Vois, or Carfax church, this is crossed at right angles by St. Giles's, the other principal street; and from these most of the other streets diverge.

High-street is perhaps the most beautiful in the world for its length and breadth, the number and elegance of its public buildings, and its remarkably graceful curvature, continually presenting new combinations of objects. St. Giles's begins near the church of that name, and is for some distance of a fine width. It contains the town hall and Christ Church. All the streets are well lighted, paved, and watched. The houses originally erected as lodgings for the students or gentry during the occasional residence of the court here, still appear, and are often built of stone on an extensive scale. The best modern houses are situated in St. Giles's.

The university consists of twenty colleges, and four halls, each of which has its own students and teachers, revenues and regulations, while they are all united in a common university government. The students all live in their respective colleges at their own expense or that of the university; and on their entrance qualify as members of the church of England. The university, as a corporate body, acts under a charter of Charles I., and consists of the vice-chancellor, heads of houses, and proctors; of the house of convocation, which is formed by the vice-chancellor, proctors, and all doctors and masters who have taken out their regency; and of the congregation, which is composed of the vice-chancellor, the proctors or their deputies, the necessary regents (doctors in divinity, law, or medicine, or masters of arts for the first two years after they are admitted to their degrees), and the regents ad placitum (all resident doctors, all public professors and lecturers, all heads of

colleges and halls, and in their absence their deputies, the masters of the schools, the public examiners, and deans and censors of colleges). In the first body must originate all new statutes, orders, and regulations; and, being there passed, they are ratified by the house of convocation. The administrative officers of the university are the chancellor, high steward, vice-chancellor and two proctors. The chancellor is elected by the members of the convocation, and is usually a distinguished member of the nobility. His office was once annual, but since the fifteenth century, when Russell, bishop of London, was made chancellor for life, this mode of election has been continued. The chancellor has a court, in which he can preside either in person or by deputy, and his authority is recognised by every one of the colleges. The high steward is nominated by the chancellor. His duty is to assist the chancellor, vice-chancellor, and proctors; and executively under the chancellor to defend the privileges of the university. In the court he sits when required, as legal representative of the chancellor, and holds the court leets of the university. His appointment is for life, and he is generally a man of high birth and eminent talent. The vice-chancellor is nominated by the chancellor, recommended by the heads of houses, and sworn into office before the convocation. He is always the head of some college, and annually nominated. His duty is to superintend the performance of the university discipline, to call convocations, congregations, and courts, to license taverns, &c. He is assisted by four deputies, termed pro-vice-chancellors. The two proctors are masters of arts of at least four years standing, and not more than ten from their regency. They are chosen from the several colleges in turns. The proctors are elected by the common suffrages of all doctors and masters of arts. They assist the vice-chancellor in convocations and congregations, to see that the scholastic exercises are duly performed, the statutes and discipline observed, just weights and measures kept, &c. They name four masters of arts as assistants or pro-proctors. There is also a public orator of the university, who is chosen by the convocation, and must be at least either a bachelor of civil law or master of arts. His duty is to write letters and addresses on public occasions, as the organ of the university; and to present the honorary degree of master of arts; he also is keeper of the archives and charter, and registrar of the convocations, congregations, and other meetings, and acts. He also collects and receives the rents of the university.

There are at Oxford public lecturers and professors of divinity, Hebrew, Greek, civil law, medicine, modern history, botany, natural philosophy, astronomy, geometry, ancient history, anatomy, music, Arabic, poetry, Anglo-Saxon, common law, and chemistry. Four terms are kept in the year at the university, and degrees are taken in divinity, law, physic, music, and the arts. The total number of members in the university books is about 3000, 1000 of whom are maintained on the revenues of the university, and the rest at their own expense.

The twenty colleges are, All Souls, Baliol,

Brazen Nose, Christ Church, Corpus Christi, Exeter, Jesus, Hertford, Lincoln, Magdalen, Merton, New College, Oriel, Pembroke, Queen's, St. John Baptist's, Trinity, University, Wadham, and Worcester. *All Souls* college, founded in the year 1437, by Chichele, archbishop of Canterbury, has a warden, forty fellows, two chaplains, and six clerks and choristers. Two spacious courts, one entering from High-street, and the other from the paved court in which the Radcliffe library stands, are its principal parts. The front, towards High-street, is a low irregular range of building, but the interior has considerable grandeur. One court is 172 feet by seventy-two, and the other 172 by 155. The interior of the chapel was arranged by Sir Christopher Wren and Sir James Thornhill. The hall is a room of striking elegance, and the library is forty feet high, and 198 feet by thirty-two and a half. Sir Christopher Wren and Sir William Blackstone were educated here.

Baliol was founded about the year 1263, by Sir John Baliol of Bernard Castle, father of Baliol, king of Scotland. The society consists of a master, twelve fellows, fourteen scholars, and eighteen exhibitioners; but none of the present buildings are older than the reign of Henry VI. The chapel was built in 1529, and contains fine specimens of painted glass. The hall is a neat building, in the pointed style. The library was lately rebuilt by Wyatt, in the Gothic style.

Brazen Nose was founded in 1509 by William Smyth, bishop of Lincoln, and Sir Richard Sutton. It consists of a principal, twenty fellows, thirty-two scholars, and fifteen exhibitioners, and derives its name from a large brazen face, which was fixed on the door of an ancient hall as a knocker. It is built on the site of several ancient halls, among which was Little University Hall, supposed to have been instituted by Alfred. The court is occupied in the south by the library and the chapel; and besides the quadrangle and court are several new buildings. The hall is spacious: the present chapel was begun in 1656.

Christ Church was founded by Cardinal Wolsey in 1525: in 1529, when he fell into disgrace, Henry VIII. suspended it for three years, when he re-established it under his own name, and in 1546 translated the episcopal see hither from Oseney. Queen Elizabeth converted the grammar scholars into students, whose vacancies should be supplied from the Westminster school. The society consists of a dean, eight canons, 101 students, three professors, eight chaplains, and a suitable choir. The buildings consist of the cathedral, two spacious quadrangles, and two smaller courts. The west, or principal front, has a noble air. From the gateway in the centre rises a stately tower, in which is suspended the famous bell Great Tom, at the sound of which, every evening, the students are directed, by the statutes of the university, to retire for the night. The grand western quadrangle, entered through the gateway, was erected, and the foundation stone laid, by Wolsey. It is nearly a square of 260 feet. The second great quadrangle is termed Peckwater Court, and

the architecture is perfectly classical. The southern side contains the library. Canterbury Square is a small quadrangle, built after the model of Peckwater. Christ Church cathedral is one of the most interesting objects in Oxford. The chief parts can be traced to the reign of Henry I.; and the style is even of an earlier period. It has the form of a cross, with a square tower, surmounted by a spire steeple in the centre. The choir is ornamented with a splendid Gothic roof. The hall was built entirely under the direction of Wolsey; and is 115 feet long, and forty wide; containing several interesting paintings. The oak ceiling is beautifully carved.

Corpus Christi was founded in 1516 by bishop Fox, lord privy seal to Henry VII. and VIII.; and the society consists of a president, twenty fellows, twenty scholars, two chaplains, two clerks, and two choristers. The building is at the east of Christ Church, and to the west of Merton College, and consisted at first of one spacious quadrangle; but various additions have since been made. The library is well furnished.

Exeter, was founded by Walter Stapleton, bishop of Exeter, in 1314; it consists of a rector, twenty-five fellows, one scholar, and ten exhibitioners.

Hertford, formerly called Hert Hall, was founded also by Walter Stapleton in 1312. It consists of a principal, four senior and eight junior fellows, eight probationary students, twenty-four actual students, and four scholars. The buildings are incomplete, and the college has had no principal since 1805. Here the late Mr. Fox was educated.

Jesus was founded in 1571 by queen Elizabeth, and endowed by Hugh Price, treasurer of St. David's, for a principal, eight fellows, and eight scholars, which has been since raised to nineteen fellows, and eighteen scholars, besides exhibitioners.

Lincoln was founded by Richard Fleming, who obtained a license from Henry VI. in 1427, to make All Saints' church collegiate, and to found a college for a rector and seven scholars. It was finished in 1475, by Rotherham, bishop of Lincoln, and consists of a rector, twelve fellows, eight scholars, thirteen exhibitioners, and a Bible clerk. The buildings consist of two quadrangles. The chapel was built in 1631, and the hall in 1636.

Magdalen is one of the noblest institutions in the university. It was founded in 1458 by William Waynflete, bishop of Winchester, and consists of a president, forty fellows, thirty demies, a divinity lecturer, four chaplains, eight clerks, and sixteen choristers. No commoners are admitted. It is situated at the eastern extremity of the city, and the side towards the High-street is ornamented by a lofty tower. The great quadrangle is composed of the chapel, hall, library, a part of the president's lodgings, and chambers for the fellows and demies. The chapel is a beautiful Gothic structure, divided into two parts; the inner chapel retaining much of its original sublimity. The library is a low but extensive room. The interior of the hall is

very elegant. Magdalen is required by its statutes to entertain the kings of England and their eldest sons, whenever they visit Oxford, and has been honored with the presence of many of our kings. Attached to the college on the banks of the Cherwell are beautiful pleasure grounds. Cardinal Wolsey, Cardinal Pope, Hampden, Collins, and Addison, were educated here.

Merton is the most ancient college in Oxford, and was founded in 1264 by Walter de Merton, bishop of Rochester, and chancellor of England. It consists of a warden, twenty-four fellows, fourteen post-masters, four scholars, two chaplains, and two clerks, and is situated to the east of Corpus Christi; consisting of three courts. The first is small and irregular, but a handsome arch leads to the inner quadrangle of a pleasing style of Gothic architecture; the third court is also on a small scale: the library occupies two sides of it. The hall is a plain but respectable structure. The chapel is one of the finest Gothic buildings in the university. It is the parish church of St. John Baptist, and was erected in 1424, on the ruins of a more ancient building.

New College was founded in 1379 by William of Wykeham, bishop of Winchester. It is composed of a warden, seventy fellows, ten chaplains, three clerks, and sixteen choristers, and consists of a quadrangle, with attached chapel, hall, and library, a fine range of cloisters, and a series of buildings for the use of students, termed the Garden Court, which was completed in 1684 on the model of the palace of Versailles. The chapel is, in the interior, one of the most splendid in the university. It has undergone numerous modern alterations, under the direction of Wyatt. The painted windows are a remarkable feature of the building. The library consists of two rooms in different stories, and the gardens are laid out in good taste.

Oriel was founded in 1324 by Adam de Brom, archdeacon of Stow. The society is composed of a provost, eighteen fellows, and thirteen exhibitioners: the buildings consist of a quadrangle, with two ranges on the east and west sides of the garden, between which is placed the library, a chaste and classical structure, begun in 1788.

Pembroke was founded in 1620, by Thomas Teesdale of Glympton, in Oxford, and Richard Wightwick, rector of Isley, Berks, being named after the earl of Pembroke, then chancellor of the university. It consists of a master, fourteen fellows, and thirty scholars and exhibitioners. The chapel is a small building of the Ionic order.

Queen's takes the sixth place in the order of foundation, though the present buildings are of recent date. It was founded in 1340, by Robert Eglesfeld, confessor of queen Philippa, consort of Edward III., and consists of a provost, sixteen fellows, eight taberdars, sixteen scholars, two chaplains, two clerks, and forty exhibitioners. The hall is a fine room, sixty feet by thirty, and the library is one of the largest attached to any university.

St. John's was founded in 1555 by Sir Thomas White, and consists of a president, fifty fellows,

two chaplains, and choir. It stands on the north of the city, and has in front a wide terrace and a beautiful row of elms. It is formed of two Gothic quadrangles; the hall is a fine and well-proportioned room; the library occupies the upper story of the east and south sides of the second quadrangle. In the chapel the Corinthian order prevails.

Trinity was founded in 1554 by Sir Thomas Pope. The members are a president, twelve fellows, and twelve scholars; the chapel has great simplicity of arrangement, and the hall is a plain but noble room.

University College continues erroneously ascribed to king Alfred as its founder, but was founded by William of Durham, rector of Wearmouth, in 1249. It consists of a master, twelve fellows, and seventeen scholars, and is situated on the north side of High-street. The valuable library was completed in 1699. The hall is a spacious and handsome room: in the common room is a fine bust of Alfred.

Wadham was founded in 1611, by Nicholas Wadham, esq., of Edge and Merrifield, in Somersetshire, for a warden, fifteen fellows, fifteen scholars, two chaplains, and two clerks. It consists of a single quadrangle 130 feet square: the chapel is a handsome structure, in the Gothic style, and the library has a fine Gothic window; the hall is capacious, and here the Royal Society originated.

Worcester, originally named Gloucester College, was founded in 1714, by Sir Thomas Coke of Bentley, in Worcestershire. The whole architecture is of a noble character. It has had several endowments since, and now consists of a provost, twenty-one fellows, ten scholars, and three exhibitioners. Being a seminary for educating the novices of Gloucester monastery, it was at the reformation converted for some time into an episcopal palace. It is agreeably situated near the Isis, at the western extremity of the city.

The *halls* at Oxford were originally houses erected by the citizens of Oxford for the accommodation of the students, to whom they were let. After the foundation of so many colleges, they sunk into neglect; four, however, remain, viz. St. Alban's, St. Edmond, St. Mary Magdalen, and New Inn Hall, and have been enriched by various endowments. Each is governed by a principal, and by the university statutes; the students possessing the privileges, and wearing the same dress, with those of the colleges. If entitled to little notice, amidst the blaze of architectural beauty around, the buildings are in general commodious, and the halls have produced a due proportion of eminent characters. Of the other public buildings, the schools form, together with the Bodleian library and the picture gallery, a noble quadrangle. These schools were erected in the fifteenth century, the professors reading lectures in their sciences, and the scholars of the university being enjoined to perform here their exercises for degrees. The Bodleian comprises three extensive rooms, disposed in the convenient form of the letter H. It was founded by Humphrey duke of Gloucester, but greatly augmented by the munificence of Sir Thomas Bodley, and now contains one of the most va-

luable collections of books, MSS., &c. in Europe. In an apartment on the north side of the schools are the famous ARUNDELIAN MARBLES: see that article. The theatre is a fine building, on the plan of the Roman theatre of Marcellus. It was built by Sir Christopher Wren, and is capable of containing 4000 persons. The Clarendon printing-house is also a large and respectable edifice, built in 1711, with the profits of the sale of lord Clarendon's History. The Radcliffe library is another of the ornaments of the university, founded by Dr. Radcliffe, and completed in 1749. The Ashmolean museum was founded in 1682, by Elias Ashmole, for the reception of curiosities both natural and artificial. The observatory is an elegant building, in a retired situation, at the extremity of the north suburb.

At St. Mary's church, the chief members of the university attend divine service; and, besides this, Oxford contains thirteen other churches, belonging respectively to the thirteen parishes into which it is divided, viz. All Saints, Carfax or St. Martin's, St. Clement's, St. Ebb's, St. Giles's, Holywell, St. John's, St. Mary Magdalen's, St. Michael's, St. Peter's in the East, St. Peter's in the Bailey, St. Aldgate's or St. Old's, and St. Thomas's. There are also places of worship for the Roman Catholics, Quakers, Methodists, Baptists, &c. The other public buildings are the town and county-hall and jail, city bridewell, music room, Radcliffe infirmary, and the well-contrived general market. Here are also various charity schools; but no theatrical representations are allowed in the city.

Oxford has no considerable manufacture or branch of trade; the canal, however, has recently opened new sources of commerce; and the city sends four members to parliament, two for the city, elected by the citizens and freemen, and two for the university. The government, subject to the chancellor or vice-chancellor of the university, in all affairs of moment, is vested in a mayor, high steward, recorder, four aldermen, eight assistants, two bailiffs, a town-clerk, two chamberlains, and twenty-four common council. The mayor, at the coronation feasts of the kings and queens of England, receives a gilt bowl and cover as his fee. The history of Oxford would require a volume of no ordinary size to trace: its early portions are involved in obscurity, and no credit can be given to any accounts of it before the reign of Alfred, when it appears to have had a famous monastery dedicated to the Trinity. The name is supposed to be derived from a ford for oxen, being formerly written Oxenford, and it was certainly a town in the tenth century. William the Conqueror was compelled to force an entrance into this city; his successors frequently made Oxford the place of their residence, and summoned both parliaments and councils here. Charles I. spent here the whole winter of 1646. Oxford early attained a degree of distinction from the number of its schools, but no regular corporate institution deserving the name of a university appears to have existed even at the period of the Norman Conquest. Many halls and schools were erected under the patronage of Richard I.; and, in the

reign of king John, the number of scholars is said to have amounted to 3000. In that of Henry III. the students greatly increased; and about this time was introduced the practice of erecting and endowing colleges, which since this reign have gradually accumulated to their present state. Market on Wednesday and Saturday. Fifty-eight miles west by north of London.

OXFORD, a county in the west part of Maine, bounded east by Somerset and Kennebeck counties, south by Cumberland and Oxford counties, and west and north-west by New Hampshire. Population 17,630. Chief town, Paris.

OXFORD, a post town of Chenango county, New York, eight miles south of Norwich, 110 west of Albany. Population 2988. It is a flourishing town, has an academy, and a considerable village. A weekly newspaper is published here. Also a post town of Sussex county, New Jersey, on the east side of the Delaware; seventeen miles N. N. E. of Easton. Population 2470.

OXFORD, a post town and port of entry, Talbot county, Maryland, on the Treadhaven, eight miles above its mouth. Thirteen miles S. S. W. of Easton, forty-eight south-east of Baltimore. It is a place of considerable trade. The shipping belonging to this port in 1816 amounted to 15,720 tons.

OXFORDSHIRE. This county takes its name from the city of Oxford. When the Romans entered Britain under Aulus Plantius, by command of the emperor Claudius, a great portion of the districts now denominated Gloucestershire and Oxfordshire was inhabited by a race of aboriginal Britons termed Dobuni; and during the Saxon heptarchy it formed a part of the kingdom of Mercia. Oxfordshire is an inland county, bounded on the east by Buckinghamshire, on the west by the county of Gloucester; on the S. S. W. and south-east its limits unite with those of Berkshire; the river Cherwell separates Oxfordshire from Northamptonshire on the north-east, while the county of Warwick lies contiguous to the north-west. It is of a very irregular figure; near the centre of the county, at the city of Oxford, it is not more than seven miles across; and yet in the more northern part, at no great distance, its diameter is thirty-eight miles. Proceeding northward it assumes the resemblance of a cone, and terminates at what is called the Three Shire Stone, in a complete point or apex; the part south of Oxford is likewise disproportionately narrow, when compared with the chief central districts of the county; at no point south of the city of Oxford above twelve miles in width: its greatest length is fifty miles. Oxfordshire is divided into fourteen hundreds; and contains one city, twelve market towns, and 207 townships. According to a topographical survey, made by Mr. Davis, there are about 450,000 acres of land in the county. The whole is in the diocese of Oxford, and in the province of Canterbury. It is included in the Oxford circuit. The climate of Oxfordshire may be accounted in general cold, particularly the westward part of the northern division, where the fences consist chiefly of

stone walls, and consequently afford little or no shelter. It is cold also upon and near the Chiltern Hills, especially on the poor white lands at the foot of the hills, where it is always to be observed that the frost will take effect sooner and continue longer on that soil than it does on the deeper lands further situated from the hills. The climate of the Chiltern country is moist, on account of the fogs, which are more frequent on the hills and woods than in the vale. The soil of this county contains (according to Young's Survey) three distinctions of soil, that are so marked by nature as to allow of little doubt respecting them. 1. The red land of the northern district, which in fertility much exceeds that of any other portion of equal extent. 2. The district of Stonebrush. 3. The Chiltern Hills. 4. Miscellaneous loams. The proportionate extent of these soils, taking the total of the county at 450,000 acres, may be thus stated, in the estimation of Mr. Neele:—Red land 79,635 acres, Stonebrush 164,023, Chiltern 64,778, miscellaneous 166,400; total 474,836. In so much as the counties of Oxford and Berks are contiguous, they are separated from each other by the rivers Isis and Thames. The river Thames, which runs through the county, falls into the Isis at Dorchester, and from that place takes the name of Thames. Other rivers in Oxfordshire are the Cherwell, which divides this county from Northamptonshire on a part of the boundary only; the Windrush; the Evenlode; the Glym; and the Ray, besides numerous streams of inferior note: so that this county may be considered as inferior to none in point of being well watered. The Oxford Canal enters the county at its northern extremity, between Claydon and the Three Shire Stone. Approaching the vicinage of the river Cherwell, at Cropredy, it proceeds at a small distance from the banks of that river to the city of Oxford, where it falls into the navigation of the Isis. The advantages derived from this recent cut are incalculably great, as it opens an immediate connexion between the interior of the county and Birmingham, Liverpool, Manchester, and the Wednesday collieries. The produce of this county is chiefly like that in most of the midland farming counties: much butter and cheese are made, and numerous calves are reared and fed for the London markets; it grows also a considerable quantity of corn. The principal manufactures are those of blankets at Witney, shag at Banbury, gloves and polished steel at Woodstock, and some lace-making and spinning by the country people towards the borders of Buckinghamshire. This county returns nine members to parliament, viz. two for the county, two for the city of Oxford, two for the university of Oxford, two for Woodstock, one for Banbury. The dukes of Marlborough have long possessed a great sway over this county; but the Jenkinsons represented it from 1707 to 1734.

OXIDES. Substances combined with oxygen, without being in the state of an acid.

OXIGENE, in chemistry. See OXYGEN.

OX'LIP, *n. s.* Ox and lip. Another name for the cowslip.

A bank whereon the wild thyme blows,
Where *asleep* and the nodding violet grows.

Shakespeare.

OXNAM, formerly called Oxenham, a parish of Scotland, in Roxburghshire, nine miles in length, and upon an average five miles in breadth. It is watered by the rivers Oxnam, Coquet, and various other streams. The number of inhabitants is between 700 and 800.

OXTONGUE, *n. s.* Fr. *buglossa*. A plant. **OXUCIÆ**, in natural history, from Gr. *οξύς*, sharp, and *κων*, a column, a genus of fossils of the class of selenite, but of the columnar, not the rhomboidal, kind. Of this genus there are only two known species:—1. A fine kind with flakes and transverse filaments, found in the clayey banks of the river Nen, near Peterborough in Northamptonshire; and, 2. A dull kind with thick plates and longitudinal filaments. This is common in Yorkshire, and lies sometimes in a yellow and sometimes in a blue clay.

OXUS, a river of Central Asia, the principal part of whose course is through Independent Tartary, rises in the high table land of Pamer, in a narrow valley, enclosed on three sides by a high mountain called Pooshtikhur, where the stream is seen issuing from a vast mass of ice. It first rolls S. S. W., and then W. N. W., but always between lofty mountains, and receiving large accessions of water. It then bursts into the plain, and, being turned by a branch of the Hindoo Coosh, directs its course to the north-west. It now flows through the plain of Bukharia, on passing which it reaches an extensive desert, near the Tartar cities of Khieva and Urgunge, and at length falls into the Aral Sea, after a course of more than 1200 miles. It has been believed that it fell anciently into the Caspian, and was turned artificially into its present receptacle; but this is solely founded upon the ancients being ignorant of the existence of the Aral as a separate sea, and who therefore could find no other termination for the Oxus than the Caspian. It passes through a desert country abounding with sands.

OXYCRATE, *n. s.* Gr. *οξύκρατον*; French *oxycrate*; Gr. *οξύς* and *κρᾶσις*. A mixture of water and vinegar.

Apply a mixture of the same powder, with a compress prest out of *oxycrate*, and a suitable bandage.

Wiseman.

OXYDATION, a term applied by modern chemists to express the process by which bodies are converted into oxides; and it is allowed on all hands to be exactly similar to combustion. The nature of this process has been much disputed; and the question involves in it great part of the controversy between the followers of Stahl and the celebrated Lavoisier, the founders of the phlogistic and antiphlogistic theories, which for some years divided the chemical world. But the latter doctrine has now completely triumphed, and the former is quite exploded. See **CALCINATION**, **CHEMISTRY**, **COMBUSTION**, **INFLAMMATION**, and **PHLOGISTON**.

OXYGEN GAS. This gas was obtained in 1774 from red oxide of mercury exposed to a burning lens, by Dr. Priestley, who observed

its distinguishing properties of rendering combustion more vivid and eminently supporting life. Scheele obtained it in different modes in 1775; and in the same year Lavoisier, who had begun, as he says, to suspect the absorption of atmospheric air, or of a portion of it, in the calcination of metals, expelled it from the red oxide of mercury heated in a retort.

Oxygen gas forms about a fifth of our atmosphere, and its base is very abundant in nature. Water contains 88·88 per cent. of it; and it exists in most vegetable and animal products, acids, salts, and oxides.

This gas may be obtained from nitrate of potash, exposed to a red heat in a coated glass or earthen retort, or in a gun-barrel; from a pound of which about 1200 cubic inches may be obtained; but this is liable, particularly towards the end of the process, to a mixture of nitrogen. It may be expelled, as already observed, from the red oxide of mercury, or that of lead; and still better from the black oxide of manganese, heated red hot in a gun-barrel, or exposed to a gentle heat in a retort with half its weight, or somewhat more, of strong sulphuric acid. To obtain it of the greatest purity, however, the chloride of potash is preferable to any other substance, rejecting the portions that first come over as being debased with the atmospheric air in the retort. Growing vegetables, exposed to the solar light, give out oxygen gas; so do leaves laid on water in similar situations, the green matter that forms in water, and some other substances.

Oxygen gas has neither smell nor taste. Its specific gravity is 1·1111; 100 cubic inches weigh 33·88 grains. It is a little heavier than atmospheric air. Under great pressure water may be made to take up about half its bulk. It is essential to the support of life: an animal will live in it a considerable time longer than in atmospheric air; but its respiration becomes hurried and laborious before the whole is consumed, and it dies, though a fresh animal of the same kind can still sustain life for a certain time in the residuary air.

Combustion is powerfully supported by oxygen gas. Any inflammable substance previously kindled, and introduced into it, burns rapidly and vividly. If an iron or copper wire be introduced into a bottle of oxygen gas, with a bit of lighted touchwood or charcoal at the end, it will burn with a bright light, and throw out a number of sparks. The bottom of the bottle should be covered with sand, that these sparks may not crack it. If the wire coiled up in a spiral like a corkscrew, as it usually is in this experiment, be moved with a jerk the instant a melted globule is about to fall, so as to throw it against the side of the glass, it will melt its way through in an instant, or, if the jerk be less violent, lodge itself in the substance of the glass. If it be performed in a bell glass, set in a plate filled with water, the globules will frequently fuse the vitreous glazing of the plate, and unite with it so as not to be separable without detaching the glaze, though it has passed through perhaps two inches of water.

OXYGENATION. This word is often used instead of oxidation, and frequently confounded

with it; but it differs in being of more general import, as every union with oxygen, whatever the product may be, is an oxygenation; but oxydation takes place only when an oxide is formed.

OX'YMEL, *n. s.* Gl. *οξυμελι, ιξυς*, and *μελι*. A mixture of vinegar and honey.

In fevers, the aliments prescribed by Hippocrates, were pitans and decoctions of some vegetables, with *oxymel* or the mixture of honey and vinegar.

Arbuthnot.

OXYMO'RON, *n. s.* Gr. *οξυμωρον*. A rhetorical figure, in which an epithet of a quite contrary signification is added to any word.

OXYR'RHODINE, *n. s.* Gr. *οξυρροδινον*, *οξυς*, and *ροδον*. A mixture of two parts of oil of roses with one of vinegar of roses.

The spirits, opiates, and cool things, readily compose *oxyrhodines*.

Floyer on the Humours.

OYER and TERMINER, *Fr. Ouir et Terminer*; *Lat. Audiendo et Terminando*. A commission directed to the judges, and other gentlemen of the county to which it is issued, by virtue whereof they have power to hear and determine treasons, and all manner of felonies and trespasses. In our statutes the term is often printed *Oyer and Determiner*.

OYES' *Fr. oyez*, hear ye. Is the introduction to any proclamation or advertisement given by the public criers both in England and Scotland. It is thrice repeated.

Fairies, black, grey, green, and white,

Attend your office and your quality.

Crier hobgoblin, make the fairy *O yes!*

Shakespeare.

O yes! if any happy eye
This roving wanton shall descry;
Let the finder surely know
Mine is the wag.

Crashaw.

OYLETHOLE, *n. s.* See **EYLET**. It may be written *oylet*, from *ocillet*, *Fr.* but *eylet* seems better.

Distinguished slashes deck the great,
As each excels in birth or state;
His *oyletholes* are more and ampler,
The king's own body was a sampler.

Prior.

OYOLAVA, one of the larger Navigator's Islands, in the South Pacific, in long. 121° 24' W., and lat. 14° S., separated from Maouna, or Massacre Island, by a channel about nine leagues wide; and, according to Perouse, Otaheite can scarcely be compared with it for beauty, extent, and fertility. When his vessel was within three leagues of the coast it was surrounded by canoes laden with bread-fruit and other provisions, and the island seemed very populous from the central mountain to the shore.

OYSTER, *n. s.* Belg. *oester*; *Lat. OYSTERWENCH*, } *ostrea*; Gr. *οστρεον*. A }
OYSTERWOMAN, } well-known shell fish: the }
oyster wench and oyster woman are women employed in the sale of this fish; and generally, any low woman.

I will not lead thee a penny,
—Why then the world's mine *oyster*, which I with sword will open.

Shakespeare. Merry Wives of Windsor.

Off goes his bonnet to an *oysterwench*. *Shakespeare.*

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Rich honesty dwells like your mber, sir, in a poor house; as your pearl in your foul *oyster*. *Id.*

The *oysterwomen* locked their fish up,
And trudged away to cry no bishop.

Hudibras.

Another mass held a kind of *oyster* shell, and other bivalves.

Woodward.

There may be many ranks of beings in the invisible world as superior to us as we are superior to all the ranks of being in this visible world; though we descend below the *oyster* to the least animated atoms discovered by microscopes.

Watts.

Where *oyster* tube in rows
Are ranged beside the posts, there stay thy haste.

Gay.

OYSTER HARBOUR, a bay in the north part of King George the Third's Sound, New Holland, discovered by Vancouver in the year 1791; and so called from the abundance of oysters there. It will only admit vessels of a middle size, the shallowness of the water on the bar extending from shore to shore, on which were found seventeen feet water only. Long. 118° 15' E.

OYSTER ISLAND, an island in the bay of Bengal, very dangerous to navigation on account of its rising but just above the level of the sea, and being surrounded by rocks. It abounds with rock oysters, which the natives of the opposite coast catch with hammers, and carry to Chittagong, Dacca, and Calcutta; but it is dangerous to eat them till they have been purged in salt. It lies nine miles S.S.W. of the north point of the Arracan River.

OYSTER SHELLS are an alkali far more powerful than is generally allowed, and in all probability much better medicines than many of the more costly and pompous alkalies of the same class. These shells produce very sensible effects on the stomach, when it is injured by acid humors.

OZAMA, a river of Hispaniola, formed by the confluence of the Isabella and Ozama, two streams which unite about a league above the capital, and fall down in a beautiful wood-girted channel, as wide as the Thames at Chelsea. In rainy seasons this stream is of great convenience for bringing down provisions and produce.

OZANAM (James), an eminent French mathematician, born at Boligneux in Bresse, in 1640. His father designed him for the church; but his mathematical genius showed itself so early that he made that study his profession, and taught that science at Lyons. In 1702 he was admitted into the Royal Academy of Sciences; and died of an apoplexy in 1717. He was of a mild and serene temper, and a cheerful disposition. His works are very numerous, and have met with approbation. The principal are, 1. *Practical Geometry*, 12mo. 2. *A Mathematical Dictionary*. 3. *A Course of Mathematics*, 5 vols. 8vo. 4. *Mathematical and Philosophical Recreations*, the most complete edition of which is that of 1724, in 4 vols. 8vo. 5. *An Easy Method of Surveying*. 6. *New Elements of Algebra*, a work much commended by M. Leibnitz. 7. *Theoretical and Practical Perspective*, &c.

2 E

P.

P, a labial consonant, is formed by a slight compression of the anterior part of the lips; and is confounded by the German and Welsh with *b*. It has an uniform sound; but is sometimes mute before *t*; as accomp^t, receipt; but the mute *p* is in modern orthography commonly omitted. **P** is used, 1. as a letter; 2. as an abbreviation; 3. it was anciently used as a numeral. 1. As a letter, **P** is the fifteenth of the alphabet, and the eleventh consonant. The sound is formed by expressing the breath somewhat more suddenly than in forming the sound of *b*; in other respects these two sounds are pretty much alike. When *p* stands before *t* or *s* its sound is lost; as in the words psalms, psychology, ptolemaic, ptisan, &c. When placed before *h* they both together have the sound of *f*; as in philosophy, physic, &c. **P** and **B** are so like each other, that in ancient inscriptions, and old glossaries, these two letters have often been confounded. Several nations still pronounce one for the other. The Welsh and Germans say, *ponum vinum for bonum vinum*. Among the Latins, as often as an *s* followed, the *b* was changed into a *p*, as scribo, scripsi. St. Jerome observes, on Daniel, that the Hebrews had no **P**; but that the *ph* served them instead; adding that there is but one word in the whole Bible read with a **P**. viz. apadno. 2. As an abbreviation, **P** stands for Publius, Pondo, &c. **P. A. DIG.** for Patricia Dignitas; **P. C.** for Patres Conscripti; **P. F.** for Publici Filius; **P. P.** for Propositum, or Propositum publice; **P. R.** for Populus Romanus; **P. R. S.** for Prætoris sententia; **P. R. S. P.** for Præses provincie. **P. M.**, among astronomers, is frequently used for post meridiem, or afternoon; and sometimes for post mane, after the morning, i. e. after midnight. On the French coins, **P** denotes those that were struck at Dijon. In the Italian music, **P** stands for piano, or softly; and **P. P. P.** for pianissimo, or very softly. Among physicians, **P** stands for pugn, or the eighth part of a handful; **P. Æ.** partes æquales, or equal parts of the ingredients; **P. P.** signifies pulvis patrum, or Jesuit's bark in powder; and *ppt.* preparatus, prepared. 3. As a numeral, **P** was used among the ancients to signify the same with the **G**, viz. 100; though Baronius thinks it rather stood for seven. When a dash was added a-top of **P**, it stood for 400,000. The Greek π signified eighty.

PA, a city of China, in Sechuen, of the second rank. It stands in long. 106° 24' E., lat. 31° 31' N.

PA, a fortified city of China, of the second rank, in Pe-che-lee, fifty miles south of Pekin. Also a town of Thibet, 450 miles east of Lassa.

PAARDEBERG, or the Horse Mountain, a division of the district of Drakenstein, Cape of Good Hope, so named from the number of zebras that were formerly found here. Its chief produce is wheat.

PAARLBERG, a mountain in the territory of the Cape, to the north of the peninsula on which Cape Town is situated. A chain of large rocks,

like a necklace, pass over the summit, and present a very remarkable appearance, which gives name to the mountain. Two of them, placed near the central and highest point, are called the Diamond and the Pearl. The Pearl is about 400 feet above the summit of the hill, and the circumference of its base is nearly a mile. The Diamond is larger. See CAPE OF GOOD HOPE.

PAAW (Peter), a Dutch physician, born at Amsterdam in 1564. He became eminent at Leyden, where he wrote several Latin treatises on medicine, and died in 1716.

PABAY, a small island of the Hebrides, about eight miles from Barray, nearly a mile and a half long, one broad, inhabited by three families.

PABBA, a small island of Scotland, two miles from Sky, about a mile long, and three-fourths of a mile broad. It is used only for pasturing cattle. In one place are indications of iron ore; and many of the rocks are of the finest limestone, and exhibit beautiful petrifications. At its northern extremity are the remains of a chapel.

PABBAY, one of the isles which compose the district of Harris, Inverness, Scotland. It has a conical appearance, and rises to a high peak. Its diameter, at the base, may measure about two miles and a half. This island, once fertile in corn, has its south side now covered with sand drift, and exhibits the most desolate appearance. Towards the south-west, indeed, it is partially sheltered, and still productive; but on the north-west again, where exposed to the sea-spray, scarcely any vegetation remains.

PABLO, a small lake of Quito, in the province of Otavalo, on which is situated a settlement of this name. Forty miles east of Quito. It is also the name of other settlements of South America.

PABULAR, *adj.* } Lat. *pabulum*. Afford-
PABULATION, *n. s.* } ing aliment: pabulation
PABULOUS, *adj.* } is the act of feeding or
PABULUM, *n. s.* } procuring food: pabu-
lous, alimental: pabulum, food; support; main-
tenance in regard to food.

We doubt the air is the *pabulous* supply of fire, much less that flame is properly *air* kindled.

Brown's Vulgar Errors.

PACAJES, a province of Peru, bounded north by Chucuito and the great lake, north-east by Omasuayos, east by La Paz and Sicacas, south by Oruro, Paria, and Caramgas, and south-west and west by the lofty chain of the Andes. Its length from the bridge of the Desaguadero, which divides it from Chucuito, to the province of Paria, is fifty-six leagues, and its greatest width forty. The climate is cold, and the population, chiefly Indian, very thinly scattered. A mine of talc, which supplies the whole of Peru with window lights, is its only remarkable production.

PACAMOROS YAGUARSONGO, or San Juan de Salinas, vulgarly called De Bracamoros, a province and government of Quito, bounded north by the territory of Zamora and the province of Loxa, west by Piura, south by the river Amazon, and east by Indian territories. This pro-

vince is thinly peopled, but has rich gold mines. The pastures and tobacco are excellent. It also yields wax, cotton, and the finest cacao.

PACASMAYU, a river and bay of Peru, in the province of Saria, which flows down the mountains of Caxamarca, runs west, and falls into the Pacific. In its mouth are caught excellent fish. Lat. of its mouth $7^{\circ} 24' S$.

PACALONGANG, a European town and fort on the north coast of the island of Java, 282 miles east of Batavia. It is the seat of a resident, a few Dutch families, and a numerous population of natives and Chinese. The great road across the island passes through this place; and near it is a forest many miles in extent, which is so unhealthy that about 4000 people perished in cutting that part.

PACE, *n. s., v. n., & v. a.* } *Fr. pas*; Italian *Pa'cen*, *adj.* } *passo*; Lat *passus*.

Step; manner of step or walk; gait; gradation; degree of celerity; a measure of five feet; a particular movement of a horse: to move regularly or slowly; to measure by steps: paced, is having a particular gait.

He soft arrived on the grassie plain,
And fairly paced forth with easy pain.

Spenser.

To-morrow, and to-morrow, and to-morrow,
Creeps in this petty pace from day to day,
To the last syllable of recorded time;
And all our yesterdays have lighted fools
The way to dusky death. *Shakespeare. Macbeth.*

Where in the horse that doth untread again
His tedious measures with the' unbated fire
That he did pace them first? *Shakespeare.*

If you can pace your wisdom
In that good path that I would wish it go,
And you shall have your bosom on this wretch. *Id.*

Remember well, with speed so pace,
To speak of Perdita. *Id. Winter's Tale.*

Nor her winged speede,
The falcon gentle could for pace exceed.

Chapman.

His teachers were fain to restrain his forwardness;
that his brothers, under the same training, might
hold pace with him. *Wotton's Buckingham.*

The violence of tempests never moves the sea
above six paces deep.

Wilkins's Mathematical Magick.

He mended pace upon the touch. *Hudibras.*

They rode, but authors having not
Determined whether pace or trot;
That's to say, whether tollutation
As they do term it, or succussation. *Id.*

Measuring land by walking over it, they styled a
double step; i. e. the space from the elevation of one
foot to the same foot set down again, mediated by
a step of the other foot; a pace equal to five foot; a
thousand of which paces made a mile. *Holder.*

The first pace necessary for his majesty to make is
to fall into confidence with Spain. *Temple.*

Revenge is sure, though sometimes slowly paced;
Awake, awake, or sleeping sleep thy last. *Dryden.*

The beggar sings, ev'n when he sees the place
Beset with thieves, and never mends his pace. *Id.*
Hudibras applied his spur to one side of his horse,
as not doubting but the other would keep pace with
it. *Addison.*

The moon rose in the clearest sky I ever saw, by
whose solemn light I paced on slowly without inter-
ruption. *Pope.*

A **PACE** is a measure taken from the space between the two feet of a man in walking; usually reckoned two feet and a half, and in some men a yard or three feet. The geometrical pace is five feet; and 60,000 such paces make 1° on the equator.

PACE (Richard), a learned Englishman, born about 1482. Henry VIII. made him secretary of state; and he was admitted prebendary of York, archdeacon of Dorset, and dean of St. Paul's, &c., during his absence on foreign embassies. Falling under the displeasure of Wolsey, he was so ill treated as to drive him mad, and was thrown into the Tower on his complaining to the king. After being confined two years, he was enlarged, resigned his deaneries, and died in retirement, at Stepney, in 1532, after having written several works. He was much esteemed by the learned men of his time, especially Sir Thomas More and Erasmus.

PACHA, a title of honor and command in the east, synonymous with bashaw. See **BASHAW**.

PACHETE, or **PACMER**, a zemindary in the province of Bengal, now incorporated in the surrounding districts of Rangur, Birbhoom, and Burdwan. In 1784 Pachete, Chuta, Nagpoor, Palamow, and Rangur, contained, according to major Rennel's mensuration, 21,732 square miles, of which 16,732 were nearly waste. The revenue was 161,216 rupees. Pachete is bounded by Chuta Nagpoor, and Rangur, containing a jungly territory of about 2779 square miles, which was once a frontier territory towards the western confines of Bengal, and still retains much of the sterility and barbarism of the neighbouring regions to the south. The climate is very unhealthy. The principal towns are Pachete, Rogonauthunge, and Jauldah, which, with the zemindary, were formerly held by the Rajpoot Narrain family. The chief products of this province are rice and cotton.

PACHETE, a town in the province of Bengal, the capital of the zemindary of this name, 126 miles north-west from Calcutta.

PACHODECARHOMBIS, in the ancient system of mineralogy, a genus of fossils, of the class of selenite. The word is derived from the Greek *παχος*, thick, *δισα*, ten, and *ρομβος*, a rhombus, and expresses a thick rhomboidal body, composed of ten planes. The characters are that the selenite of it consist of ten planes; but, as the top and bottom in the leptodecarhombes are broader and larger planes than any of the rest, the great thickness of this genus, on the contrary, makes its four longer planes in all the bodies of it, meeting in an obtuse angle from its sides, its largest planes. There are four species.

PACHUCO, a town and province of the intendancy of Mexico. It has a magnificent parish church; and the royal coffers, where the treasurer and accountant reside, were formerly here. The trade in silver is the principal of the place. The ground on which it stands is 8141 feet high, forty-five miles north-east of Mexico.

PACHYMERUS (George), a Greek historian of the fourteenth century. He wrote a History of the East, which merits the more credit from the share he had in the transactions he records. It commences with the year 1308.

PACIFIC, *adj.* } *Fr. pacifique, paci-*
PACIFICATION, *n. s.* } *fier; Lat. pacificus,*
PACIFICATOR, } *pacifico.* Peaceable;
PACIFICATORY, *adj.* } making peace; mild;
PACIFIER, *n. s.* } gentle: pacification is
PACIFY, *v. a.* } the act of making

peace: pacificator, he who makes peace: pacificatory, tending to make peace: to pacify is to appease; quell anger, resentment, or desire.

Menelaus promised Ptolemy money, if he would *pacify* the king. 2 *Mac.* iv. 45.

The Most High is not *pacified* for sin by the multitude of sacrifices. *Ecclus.* xxiv. 19.

While the dog hunted in the river, he had withdrawn to *pacify* with sleep his over-watched eyes. *Sidney.*

A world was to be saved by a *pacification* of wrath, through the dignity of that sacrifice which should be offered. *Hooker.*

He sent forthwith to the French king his chaplain, chusing him because he was a churchman, as best sorting with an embassy of *pacification*. *Bacon.*

He set and kept on foot a continual treaty of peace; besides he had in consideration the bearing the blessed person of a *pacificator*. *Id.*

In his journey he heard news of the victory, yet he went on as far as York, to *pacify* and settle those countries. *Id.*

God now, in his gracious *pacific* manner, comes to treat with them. *Hammond's Fundamentals.*

Returning, in his bill

An olive leaf he brings, *pacifio* sign! *Milton.*

O villain! to have wit at will upon all other occasions, and not one diverting syllable now at a pinch to *pacify* our mistress. *L'Estrange.*

Nor William's power, nor Mary's charms,

Could or repel, or *pacify* his arms. *Prior.*

David, by an happy and seasonable *pacification*, was took off from acting that bloody tragedy. *South.*

PACIFIC OCEAN, Mare Pacificum, or South Sea, in geography, that vast ocean which separates Asia from America, originally called Pacific from the moderate weather which the first mariners, and particularly Magellan, who sailed in it, met with between the tropics; and it was called the South Sea, because the Spaniards crossed the Isthmus of Darien from north to south. With regard to America it is also sometimes called the Western Ocean. Far from this ocean being less infested with storms than the Atlantic, no sea is subject to rougher storms in high latitudes; but Magellan happening to have a very favorable wind, and not meeting with any thing to ruffle him when he first traversed this vast ocean in 1620, gave it the name which it has retained ever since. Maty adds, that the wind is so regular here that the vessels would frequently go from Acapulco to the Philippine Islands, without shifting a sail. The general trade winds in the Pacific Ocean are similar to those of the Atlantic, blowing constantly between the north and east in the northern tropic, and between the south and east in the southern. Near the west coast of America their limits are strictly confined to the tropics, or even within them, but they widen as they move onwards towards the coast of Asia.

This ocean fills the largest cavity of the globe, occupying nearly half of its surface from the eastern shores of New Holland to the western of America; and it is diversified with several

groups of islands, which seem, as it were, the summits of vast mountains. Separately considered, this ocean receives but few rivers; the chief being the Amur from Tartary, and the Hoan-ho and Kian-ku from China, the principal American rivers running east. As the boundary of the Russian empire, the Pacific washes the shores of the government of Irkutsk, from Tschukotskoy Noss, or Cook's Straits, to the frontiers of China; or from the mouth of the river Aimakan, that is, from 65° to 45° N. lat. It is divided into two great parts. That lying eastwards from Kamtschatka, between Siberia and America, is eminently styled the Eastern or the Pacific Ocean; that on the west side from Kamtschatka, between Siberia, the Chinese Mongoley, and the Kurilly Islands, the sea of Okhotsk. Again, from the place where the river Anadyr falls into it, it is called the sea of Anadyr; about Kamtschatka, the sea of Kamtschatka; and the bay between the districts of Okhotsk and Kamtschatka, is called the sea of Okhotsk, the upper part of which is termed Penjinskoye Mare as it approaches the mouth of the river Penjina. See our articles **GEOGRAPHY** and **OCEAN**.

PACK, *n. s., v. a., & v. n.*

PACK-CLOTH, *n. s.*

PACK'ER,

PACK'ET, *n. s. & v. a.*

PACKHORSE, *n. s.*

PACKSADDLE,

PACKTHREAD,

PACKWAX.

Fr. pacquet;
Ital. pacchetto;
Swed. and Belg.
pack; Dan. packke.
 A bundle; bale;
 band; set;
 number: hence a given
 number of cards

or hounds, party of people, &c.; any great number: to pack is to bind up for carriage or despatch: hence to unite selected persons in a design; sort cards in a particular manner: to tie up goods; go after, or remove, in haste; concert measures (generally applied in an ill sense): a packet is a small pack or bundle; particularly of letters; the vessel which carries a mail bag: to packet is used by Swift for to bind up parcels: a packhorse is, a horse of burden; a horse used for carrying packs: packsaddle and packthread a saddle and thread, used to carry and tie up packages: packwax, an animal secretion.

New farmer thinketh each hour a day,

Until the old farmer be *packing* away. *Tupper.*

You panderly rascals! there's a knot, a gang, a pack, a conspiracy, against me. *Shakespeare.*

He cannot live, I hope, and must not die,
 Till George be *packed* with post horse up to heaven. *Id.*

Enos has

Pack cards with Cæsar, and false played. *Id.*

I rather chose

To cross my friend in his intended drift,

Than, by concealing it, heap on your head

A pack of sorrows. *Id. Merchant of Venice.*

Rogues, hence, avaunt!

Seek shelter, *pack*.

Shakespeare.

Go *pack* with him. *Id. Timon Andronicus.*

In the dark

Groped I to find out them,

Fingered their *packet*, and in fine withdrew.

Shakespeare.

Ere you were queen, ay, or your husband king,
 I was a *packhorse* in his great affairs. *Id.*



Your boards deserve not so honourable a grave as to stuff a butcher's cushion, or to be entombed in an ass's *packsaddle*. *Id.*

About his shelves

Remnants of *packthread*, and old cakes of roses, Were thinly scattered. *Id. Romeo and Juliet.*

There be that can *pack* cards and yet cannot play well; so there are some that are good in canvasses and factions, that are otherwise weak men.

Bacon's Essays.

Themistocles said to the king of Persia, that speech was like cloth of Arras, opened and put abroad, whereby the imagery appears in figures; whereas in thoughts they lie but as in *packs*. *Bacon.*

There passed continually *packets* and dispatches between the two kings. *Id. Henry VII.*

Girding of the body of the tree about with *packthread*, restraineth the sap. *Id. Natural History.*

The wind no sooner came good, but away *pack* the galleys with all the haste they could. *Carew.*

That this so profitable a merchandize, riseth not to a proportionable enhancement with other less beneficial commodities, they impute partly to the eastern buyers *packing*, partly to the owners not vending the same. *Id.*

Had sly Ulysses at the sack

Of Troy, brought these his pedlar's *pack*. *Cleveland.*

The marigold, whose courtier's face Echoes the sun, and doth unlace Her at his rise, at his full stop *Packs* and shuts up her gaudy shop. *Id.*

That brave prancing courser hath been so broken and brought low by her, that he will patiently take the bit and bear a *packsaddle* or panniers. *Howel.*

Upon your late command

To guard the passages, and search all *packets*, This to the prince was intercepted. *Denham.*

Never such a *pack* of knaves and villains, as they who now governed in the parliament. *Clarendon.*

Our knight did bear no less a *pack* Of his own buttocks on his back. *Hudibras.*

When they have *packed* a parliament, We'll once more try the expedient; Who can already muster friends, To serve for members to our ends. *Id.*

A poor merchant driven on unknown land, That had by chance *packed* up his choicest treasures In one dear casket, and saved only that. *Otway.*

The bunch on a camel's back may be instead of a *packsaddle* to receive the burden. *Moss.*

His *packets* returned with large accessions of objections and advertisements. *Fell.*

If they had been an hundred more, they had been all sent *packing* with the same answer. *Stillfleet.*

Resolved for sea, the slaves thy baggage *pack*, Each saddled with his burden on his back. *Dryden.*

Two ghosts join their *packs* to hunt her o'er the plain. *Id.*

The fury fires the *pack*; they snuff, they vent, And feed their hungry nostrils with the scent. *Id.*

Pack hence, and from the covered benches rise, This is no place for you. *Id.*

But when they took notice how stupid a beast it was, they loaded it with *packs* and burdens, and set boys upon the back of it. *L'Estrange.*

A thief kindled his torch at Jupiter's altar, and then robbed the temple: as he was *packing* away with his sacrilegious burden, a voice pursued him. *Id.*

It is not to be expected that a man, who drudges on in a laborious trade, should be more knowing in the variety of things done in the world, than a *pack-*

horse who is driven constantly forwards and backwards to market, should be skilled in the geography of the country. *Loche.*

Several parts peculiar to brutes are wanting in man; as the strong aponeuroses of the neck, called *packwas*. *Ray.*

Brutes, called men, in full cry *packed* by the court or country, run down in the house of commons, a deserted horned beast of the court. *Wycherley.*

The *pack* taken together, composed of fifty-two cards, is palpably a symbol of the solar year, consisting of fifty-two weeks, referring to time in general; and however dealt out, in its speedy revolution, affords a document, that even in our pastimes we should be mindful of its transient and brief duration. *Whyte's Poems, notes.*

It is wonderful to see persons of sense passing away a dozen hours together in shuffling and dividing a *pack* of cards. *Addison.*

What we looked upon as brains, were an heap of strange materials, *packed* up with wonderful art in the skull. *Id.*

His horse is vicious, for which reason I tie him close to his manger with a *packthread*. *Id.*

The expected council was dwindled into a conventicle; a *packed* assembly of Italian bishops, not a free convention of fathers from all quarters. *Atterbury.*

Women to cards may be compared, we play A round or two, when used we throw away, Take a fresh *pack*. *Granville.*

I can compare such productions to nothing but rich pieces of patchwork, sewed together with *packthread*. *Fellon.*

The judge shall jobb, the bishop bite the town, And mighty dukes *pack* cards for half a crown. *Pope.*

Bickerstaff is more a man of honour than to be an accomplice with a *pack* of rascals that walk the streets on nights. *Swift.*

Poor Stella must *pack* off to town, From purling streams and fountains bubbling, To Liffy's stinking tide at Dublin. *Id.*

People would wonder how the news could come, especially if the wind be fair when the *packet* goes over. *Id.*

My resolution is to send you all your letters, well sealed and *packeted*. *Id.*

So many greater fools than they, Will *pack* a crowded audience the third day. *Southern.*

The savage soul of game is up at once, The *pack* full opening various. *Thomson's Summer.*

PACORUS, the eldest of the thirty sons of Orodes, king of Parthia, who defeated Crassus, and took him prisoner, and took Syria from the Romans. He supported Pompey and the republican party; but was at last killed by Bassus, A. A. C. 39. See PARTHA.

PACOS, in zoology, a species of camel, known among many by the name of the Indian sheep, or Peruvian sheep. See CAMELUS. This creature has been accounted a sheep, because its hair is so long as to resemble wool, and it is prodigiously thick, its head and neck alone having more wool on them than the whole body of our largest sheep. Its body is clothed in the same proportion with a woolly hair equally fine.

PACT, *n. s.* } Fr. *pact*; Lat. *pactum*.
PAC'TION, } Both the substantives are
PACTI'OUS, *adj.* } used to signify a bargain or covenant: pactitious is, settled by covenant.

The queen, contrary to her *past* and agreement concerning the marriage of her daughter, delivered her daughters out of sanctuary unto king Richard.

Bacon.

The French king sent for Matthew, earl of Levenox, to remove the earl of Arraine from the regency of Scotland, and reverse such *pactions* as he had made.

Hayward.

There never could be any room for contracts or *pactions*, between the Supreme Being and his intelligent creatures.

Chayne.

PACTOLUS, a river of Lydia, rising in Mount Tmolus, called Chrysorrhoeas, from its rolling down golden sand, according to Herodotus, Plutarch, Pliny, and Strabo. In this river Midas was fabled to have washed himself; and from it Cræsus is thought to have had all his riches. In Strabo's time it ceased to roll down any. It ran through Sardes; after which it fell into the Hermus, and both together into the *Egean* Sea at Phocæa in Ionia. The kings of Persia obtained possession of the Pactolus and its treasures by Cyrus's conquest of Lydia. Xerxes I. drew gold from the Pactolus, and this valuable metal was furnished by it in the time of Herodotus; but it afterwards failed long before the time of Strabo. The gold of the Pactolus was derived from the mines of Mount Emolus; and, when these were exhausted, the supply of the river was discontinued. This river was, according to Varro and Chrysostom, the chief source of the wealth of Cræsus.

PACUVIUS (Marcus), a native of Brundisium in Calabria, a tragic poet in high reputation about the year of Rome 600. He was nephew of Ennius; published several theatrical pieces, though we have only some fragments of his poetry remaining; and died at Tarentum, at above ninety years of age.

PAD, *n. s. & v. n.* } Sax *paad*; Belg. *pad*; PAD'DER, *n. s.* } Teut. *pfad*; Sans. *pad*; Gr. *παρος*. A path; road; footway; an easy-paced horse; a soft saddle; a robber infesting the roads on foot: to tread gently or at a slow pace; beat a way; rob on foot: a *padder* is a foot highwayman.

Tremellius was called *scrophæa* or *sow*, because he hid his neighbour's sow under a *pad*, and commanded his wife to lie thereon; he swore that he had no sow but the great sow that lay there, pointing to the *pad* and the sow his wife.

Camden.

We shall not need to say what lack

Of leather was upon his back;

For that was hidden under *pad*. *Hudibras.*

Spurr'd as jockies use, to break,

Or *padders* to secure a neck. *Id.*

Worse than all the clattering tiles, and worse Than thousand *padders* is the poet's curse; Rogues that in dog-days cannot rhyme forbear; But without mercy read, to make you hear.

Dryden.

Let him walk afoot with his *pad* in his hand; but let not them be accounted no poets who mount and show their horsemanship.

Id.

We have seen this to be the discipline of the state as well as of the *pad*. *L'Estrange.*

A grey *pad* is kept in the stable with great care, out of regard to his past services. *Addison.*

The squire of the *pad* and the knight of the post, Find their pains no more baulked, and their hopes no more crost.

Prior.

If he advanced himself by a voluntary engaging in unjust quarrels, he has no better pretence to honour than what a resolute and successful *padder* may challenge.

Collier.

I would have set you on an easier *pad*, and relieved the wandering knight with a night's lodging.

Pope's Letters.

PADANG, a Dutch settlement on the west coast of Sumatra, to which the factories at Pulo Chincio, Priaman, and Adjerhadja, were formerly subordinate. Lat. 0° 48' S., long. 90° 55' E. The town lies one mile within the river: the land to the northward is low towards the sea, but mountainous up the country. Some pepper, camphor, and benzoin, are furnished; but ever since the establishment of the English settlement at Bencoolen the quantity collected has been small. A considerable quantity of gold is sent to Batavia. Near to Padang is a vein of this metal which formerly was worked; but, not finding the returns adequate to the expense, the Dutch East India Company let it to farm, and it now produces little or nothing. Padang was first visited by the English East India Company's ships in 1649. It was in our possession from 1794 to 1814; but in the last year given up again to the Dutch.

PA'DAR, *n. s.* L. B. *paleatura*. Grouts; coarse flour.

In the bolting and sifting of near fourteen years of such power and favour, all that came out could not be expected to be pure and fine meal, but must have amongst it *padar* and bran in this lower age of human fragility.

Wotton.

PAD'DLE, *v. n. & n. s.* } Fr. *partouiller*; Lat. PAD'DLER, *n. s.* } *patulus*. To row;

beat or play with water, as with oars; to finger: a *paddle* is an oar or broad-ended staff.

Have a *paddle* upon thy weapon. *Deut.* xiii. 13.

Paddling palms, and pinching fingers, And making practised smiles,

As in a looking-glass.

Shakespeare. Winter's Tale.

As the men were *paddling* for their lives.

L'Estrange.

A wolf lapping at the head of a fountain, spied a lamb *paddling* a good way off.

Id.

The brain has a very unpromising aspect for thinking; it looks like an odd sort of bog for fancy to *paddle* in.

Collier.

Paddling ducks the standing lake desire.

Gay.

PAD'DOCK, *n. s.* Sax. *paða*; Danish and Belg. *padde*. A toad: also corrupted from *parok* (see *PARK*), an enclosure for deer.

Where I was wont to seek the honey-bee,

Working her former rooms in waxen frame;

The grisley toad-stool grown there mought I see, And loathing *paddocks* lording on the same.

Spenser.

The *paddock*, or frog *paddock*, breeds on the land, is bony and big, especially the she.

Wotton.

The water-snake, whom fish and *paddocks* fed, With staring scales lies poisoned

Dryden.

A *PADDOCK*, or *PADDOCK-COURSE*, is a piece of ground encompassed with pales or a wall, and taken out of a park, for exhibiting races with grey-hounds, for plates, wagers, or the like. These *paddocks*, from their great extent, were seldom seen but in the royal parks, or upon the demesnes of the most opulent.

The sport has been a long time discontinued, and the word paddock is employed in the present time only to a small enclosure or pasture, having a pale to protect it; or to a small tract of land, surrounding, or appertaining to, a rural mansion, where a few brace of fallow deer may be kept, but not of magnitude sufficient to acquire the appellation of a park.

PADERBORN, i. e. the source of the Pader, an ancient town of Westphalia, subject to Prussia. This place was for a time the residence of Charlemagne, and, on different occasions, the temporary abode of succeeding emperors. It was a member of the Hanseatic confederacy, but fell by degrees into complete subjection to the bishop of Paderborn, who governed a district of above 1000 square miles, adjacent to the landgraviate of Hesse. This bishopric, founded by Charlemagne, has belonged to Prussia since the secularisation of 1802. It contains at present a population of 120,000. The town of Paderborn was taken in 1622 by duke Christian of Brunswick, at the head of a Protestant force. The cathedral is a fine edifice; and there are here no fewer than six hospitals or almshouses. The town is tolerably built, but its trade is insignificant. Population about 5300. Thirty-seven miles south by west of Minden, and fifty-eight south-west of Hanover.

PADLOCK, *n. s. & v. a.* Belgic *padde*. A lock for a gate originally; to fasten with a lock and staple.

Let all her ways be unconfin'd;

And clap your *padlock* on her mind. *Prior.*

Some illiterate people have *padlocked* all those pens that were to celebrate their heroes, by silencing Grub-street. *J. Bull.*

PAD-NAG, *n. s.* From pad and nag. An ambling nag.

An easy *pad-nag* to ride out a mile. *Dr. Pope.*

PADOGI, a punishment used in Russia. The body of the criminal is stripped to the waist, and then laid upon the ground; one slave holds the head of the person to be punished between his knees, and another the lower part of the body; then rods are applied to the back till some person gives notice to desist, by crying out enough! This punishment is considered in Russia merely as a correction of the police, exercised on the soldier by military discipline, by the nobility on their servants, and by persons in authority over all such as are under their command. After the accession of Elizabeth to the throne of Russia, the punishments were reduced to two kinds, viz. the padogi and knout.

PADSTOW, a market and sea-port town of England, on the north coast of Cornwall, on the Camel, near the Bristol Channel. It has a market on Saturday, and a good trade with London, Bristol, and Ireland; from which last it is twenty-four hours' sail distant. The church is an ancient structure, dedicated to the first St. Petrock. In this town is also a Methodist chapel. At the mouth of the Camel is a convenient harbour for vessels of 500 tons burden, at high water; but it is rather difficult of access, having rocks on the east side, and a bar of sand on the west. Padstow has also a small fishery for

herrings, and, during the season, is much frequented for sea-bathing. It has a custom-house and good quays. It is thirty miles west of Launceston, and 243 west by south of London.

PADUA, a province of Austrian Italy, in the government of Venice, adjoining the delegations of Vicenza, Treviso, Venice, Rovigo, and Verona. Its superficial extent is 860 square miles; producing the most abundant crops of corn, of which, however, little is exported, owing to the density of the population. Large quantities of wine, fruit, and silk, are likewise raised; and the pastures are rich and well stocked. The surface is agreeably diversified by the Euganean hills, a chain of moderate height, which passes through the province. It is watered by the Brenta, the Bacchiglione, and several smaller streams. Population 270,000.

PADUA, a city of Austrian Italy, the capital of the above delegation. It stands near the junction of the Brenta and Bacchiglione, and is of a triangular form, surrounded with a mound and ditch. The circuit of these is nearly seven miles; but the interior contains much open space. The town is traversed by several canals, and the streets are bordered on each side with arcades, which, while they afford a pleasant shade in hot weather, give the town a gloomy appearance. The streets are also otherwise dark and ill paved. The houses are, however, in general lofty and well built, and several of the public edifices are magnificent. The town-house is in the form of an oblong quadrangle, supported by galleries resting on marble pillars. At each end are great stair-cases, leading to an arched saloon, said to be the largest hall in Europe, being 300 feet long, 100 broad, and 100 high. It is so constructed that the roof has no support but the walls. The interior contains some fresco paintings, and a bust of Livy, who was a native of Padua. Near the town-house is situated the palace of the Podesta, remarkable for its Doric saloon, and fine paintings. The palace of the commandant is a model of beautiful architecture. The cathedral is less remarkable for its architecture than for its paintings and ornaments. The church of St. Antonio, an ancient Gothic edifice, is likewise rich in sculpture and painting. That of St. Justina is also a fine marble edifice, with a good library and a number of valuable paintings.

The university was at one time resorted to by crowds of students from all parts of Europe. Among its eminent pupils were Galileo, Petrarck, and Columbus. The buildings are the work of Palladio, and the observatory, botanical garden, anatomical theatre, cabinet of natural history, and hall of midwifery, are all on a large well-supported scale. The university was new modelled in 1814, and consists of the faculties of mathematics, philosophy, medicine, and law. The number of professors is thirty-two; the average number of students not above 300. Here is also an academy of sciences, founded by the senate of Venice. Padua is likewise the seat of one of the five sections of the Institute of Austrian Italy.

Padua was a distinguished place when it first submitted to Rome, and was treated not as a

conquered, but as an allied city. In the dark ages it found means to form itself, like a number of other cities in Italy, into an independent state; but finally fell under the sway of the Carrara family. This took place in the fourteenth century, and in the fifteenth it was incorporated into the Venetian republic. In trade it is not conspicuous, its only branches consisting of manufactures on a small scale of silk, woollens, and leather.

'Whoever,' says the lively lady Morgan, 'would judge of the mere materielle of a city, should avoid visiting its public buildings in the society of agreeable people; and I confess that after some hours given to the perambulation of Padua, with the sole exception of its singular and Gothic hall in the Palazzo della Giustizia, the magnificent church of its patron saint, and the venerable cloisters of its ancient university, I have carried away a most imperfect impression of the city of Antenor and Livy, and a most gracious one of the amiable persons who accompanied us.

'The Palazzo della Giustizia was begun in 1172 by Pietro Cozzo, and finished in 1306; it is, therefore, one of the most ancient fabrics in Italy, and has all the air of being so. The salone, or great hall, is a monument of the manners of the middle ages. It was a sort of change for the Paduan merchants, a bazaar for the people, who came there to make purchases of such glittering foreign wares as were exposed to sale on either side of this immense covered space. Its roof, 300 feet long, and 100 wide, is supported only by its own massy walls, which have stood the proof of nearly six centuries, and are still illustrated by the frescoes of Giotto, on which so many successive generations have gazed. A monument, raised to Titus Livius, completes the interest of this forum of the middle ages, whose vastness, when we visited it, was only occupied by scene painters, painting some decorations for the opera. The palace of the university is of much more modern date. It is by Palladio, and contains the public schools, the theatre of anatomy, and the museum of natural history, collected by Valisnieri; attached to the establishment there is a handsome botanical garden.

'The dim gloomy court of the university, and its successive tiers of arcades or porticoes, have out little of the usual cold Greek character of Palladio's architecture, or else the inscriptions and baso-relievs with which these walls are decorated take from their antique severity; for it is in these porticoes that the effigies, names, countries, and ages, of several of the students of Padua, are registered, who came here to—

'happily institute

A course of learning and ingenious studies,' from all parts of the world. Here many an Italian 'Lucentio,' with 'his man Tranio,' arrived

'For the great desire' he had

'To see fair Padua, nursery of arts;'

and here even many a British youth, abandoning the alma-maters of England or Edinburgh, has come thus far

'To suck the sweets of sweet philosophy'

under Italian skies. Among the names which we ran over, inscribed on these old walls, under youthful, but ill-painted heads (long laid low), we read some well-known Scotch and English names—one was 'Thomas Erskine, Scotus,' another, 'A. Henley.'

'St. Anthony of Padua is one of the most notorious saints in the calendar, and his church is one of the most splendid in Italy. We visited it in a happy moment, during the celebration of high mass on a Sunday morning. It was the first time I ever saw a great Italian church filled with an Italian congregation, one-third of which seemed composed of the higher classes: for the women were elegantly dressed à la Française, and yawned, pointed their glasses, and looked about them, with such an air of fashionable ennui, that I almost fancied myself in an English Protestant church; while, as we returned, family groups, with prayer-books and parasols, followed by footmen in respectable liveries, completed the delusion.

The old part of Padua, 'la città vecchia,' with its dark narrow streets and high old palaces, however gloomy and inconvenient, has an interest of its own, well worth the more spacious avenues and Palladian façades of the modern town. Here, doubtless, stood Gremio's house 'within the city,' which was

'Richly furnished with plate and gold,
Basins and ewers to lave the dainty hands
And hangings all of Tyrian tapestry:'

In the inventory of his rich furniture, he observes—

'In ivory coffers I have stuffed my crowns,
In cypress chests my arras, counter-points,
Costly apparel, tents and canopies,
Fine linen, Turkey cushions, 'bossed with pearl,
Valance of Venice, gold in needle-work,
Pewter and brass, and all things that belong
To house or house-keeping.'

'This was the genuine catalogue of an Italian noble's house, in the age of Shakspeare, authenticated by all which time and change have spared in Italy; there is not an article here described, that I have not found in some one or other of the palaces of Florence, Venice, or Genoa—the mercantile republics of Italy—even to the

'Turkey cushions 'bossed with pearl.'

'It has been the fashion to dispute the learning of Shakspeare; but his knowledge was overwhelming—like the frenzied eye of his own poet—

It 'glanced
From heaven to earth,'

and such was its exquisite and appropriate application, that from the Roman capitol to the house of the Paduan merchant, the details were facts, indisputable as they were minute.

The late enterprising traveller Belzoni was a native of this place. It is eighteen miles south-east of Vicenza, and twenty west of Venice.

PADUANI, among medallists, those counterfeits of antique medals that were struck in the seventh century, by an Italian painter born at Padua. See NUMISMATOLOGY.

PADUS, anciently called Eridanus, a river famous for the fable of Phaeton. It rises in Mount Vesulus, in the Alpes Cottiae, from three

springs, dividing the Cisalpine Gaul into the Transpadana and Cispadana—(Strabo); and, swelled by other rivers falling into it on each side from the Alps and Apennines, it discharges itself, with a course from west to east, at seven mouths, into the Adriatic.—Mela. The lake through which it discharges itself into the sea, is called by the natives the Seven Seas; now the Po.

PADUS, in botany. See PRUNUS.

PÆAN, *n. s.* From the songs sung at festivals to Apollo, beginning *Iō Pæan*. A song of triumph.

O may I live to hail the glorious day,
And sing loud *pæans* through the crowded way.

Roscommon.

See from each clime the learned their incense
bring:

Hear, in all tongues consenting *pæans* ring. *Pope.*

PÆAN, among the ancient pagans, was a song of rejoicing sung in honor of Apollo, chiefly used on occasion of victory and triumph. See APOLLO.

PÆAN, in the ancient poetry, a foot consisting of four syllables; of which there are four kinds, the *pæan primus*, *secundus*, &c. *Pæan primus* consists of one long syllable and three short ones, or the trochæus and pyrrhichius, as *temporibus*; *pæan secundus* consists of a short syllable, a long, and two short, or an iambus and a pyrrhichius, as *potentia*; *pæan tertius* consists of two short syllables, a long and a short one, or a pyrrhichius and a trochæus, as *animatus*; *pæan quartus* consists of three short syllables and a long one, or a pyrrhichius and iambus, as *celeritas*.

PÆDEROTA, in botany, a genus of the monogynia order, and diandria class of plants; natural order thirtieth, contortæ. The berry is empty, brittle, and dispermous; the style bifid.

PÆDO-BAPTISM, infant-baptism, or that conferred on children; from *παῖς*, infant, and *βαπτισμός*, baptism. See BAPTISM.

PÆDO-BAPTISTS, of *παῖς*, *παιδοῦς*, infant, and *βαπτίζω*, I baptise, are those who maintain that baptism should be administered to infants.

1. One of their chief arguments in support of this opinion is, that if infants, under the Christian dispensation, were excluded from baptism, the Christian institution must appear, in this respect, to be less complete and perfect than that of the Jews: and it is not (*à priori*) likely that God would appoint an external sign of peculiar distinction and benefit for children under the patriarchal and Jewish constitution, without a similar appointment under the Christian dispensation; more especially as the first proselytes to Christianity, and those in particular who were converted from among the Jews, would naturally expect some token of distinction and privilege, comprehending their children, and resembling in its design, though milder in its nature, that which Christianity had abrogated. This expectation was encouraged by the affectionate manner in which our Lord expresses himself concerning infants, particularly when he says, Mark x. 14, 'of such is the kingdom of God'; which some understand to signify, that the rights and privileges of the Christian church belong to such. With these

views, it is easy to conceive to what subjects they would apply the general charge to baptise proselytes, unless directed and restricted by an express order.

2. Wall, in his History of Infant Baptism, undertakes to show from the books of the Jews themselves, and those of others, that understood the Jewish customs, and have written concerning them, that 'it was the custom of the Jews before our Saviour's time, and, as they affirm, from the beginning of their law, to baptise as well as circumcise any proselyte that joined them from other nations, and with him, at his desire, his infant children likewise.' Upon this argument such occasional stress has been laid by able writers, that it is desirable, perhaps, that it should receive greater attention from the Baptists. See our article BAPTISM.

3. The advocates for infant baptism urge moreover the argument from circumcision, or that the covenant made with Abraham was a covenant of grace, by which spiritual and eternal blessings were promised to him, quoting Matt. xxii. 31, 32; Heb. xi. 6; Rom. iv. 11—17; Gal. iii. 6. 18. 29; and that as such it comprehended both Jews and Gentiles, and their seed. 'This argument,' says Mr. H. F. Burder, 'may be divested of all complexity. The covenant with Abraham is the same in substance with that under which we live. The same blessings of that covenant are denoted both by circumcision and by baptism. The covenant then being the same, and the ordinance being in import the same, the subjects entitled to its administration are also the same. But infants were entitled to circumcision, on the ground of their connexion with their parents; therefore infants, on the ground of their connexion with their parents, are entitled to baptism. This strong, and as we think, conclusive argument founded on the Abrahamic covenant, our opponents endeavour to invalidate, by giving a representation of the nature of that covenant which, we think, degrades its character, impairs the beauty and the harmony of the divine dispensations, and is at variance with the reasonings and conclusions of the apostle Paul. The assertion has been made that our argument fails 'by reason of the essential difference between the Jewish and Christian religions.' What a revolution must be effected in our views of the covenant of grace; what a new system of interpretation must we apply to the apostolic epistles, before we can conceive of the Jewish and the Christian dispensations as two different religions, separated from each other by a difference no less than essential! If, indeed, in order to evade the force of our argument, it be necessary to resort to such a sentiment, or even to identify or confound together the covenant with Abraham and the law of Moses, we may infer from the very character of the arguments employed by our opponents the strength and solidity of our own.

'The point of primary importance in the present argument is—the connexion established under the former economy between parents and their infant-offspring. By virtue of that connexion, infants were circumcised; and if that

connexion has never been, by divine appointment, dissolved or diminished, then, by virtue of that connexion, infants should be baptised. But where in the whole compass of the New Testament do we find the slightest intimation that the connexion is terminated? From what part of Scripture can it be proved that such a change has been introduced into the constitution of the covenant of grace? When were infants excluded, and by what law? On the contrary, do not the addresses of the apostles proceed, in many instances, on the supposition that in this important respect the state of things in the church of God remains unaltered? Observe the manner in which they adduce, on some occasions, the promises made to Abraham in reference to his offspring, and correspondent promises recorded by the prophets. On the day of Pentecost Peter said to the enquiring and agitated multitude, Repent and be baptised every one of you in the name of Jesus Christ, for the remission of sins; for the promise is unto you and to your children. Acts ii. 38, 39. On a subsequent occasion, he said, Ye are the children of the prophets and of the covenant which God made with our fathers, saying unto Abraham, And in thy seed shall all the kindreds of the earth be blessed.—Acts iii. 25. Now the question is, in what sense such an application of the ancient promises would be naturally understood by the Jewish people who were thus addressed. The promise quoted was the promise made to Abraham. That promise, as appears from the seventeenth chapter of Genesis, was given in immediate connexion with the appointment of infant-circumcision, and now the apostle Peter adduces the ancient promise in immediate connexion with baptism. ‘Repent, and be baptised every one of you, for the promise is unto you and to your children; then they that gladly received his word were baptised.’ It is not expressly said that their children were baptised with them; but if the preceding considerations be correct, with regard to the principle, the inference will not be difficult with regard to the fact.

4. We state another argument of the Pædo-baptists in the words of this respectable author: ‘That the connexion established between parent and child remains unaltered under the Christian economy, may, I think, be clearly inferred from the decision of the apostle Paul in the seventh chapter of the First Epistle to the Corinthians. ‘If any brother hath a wife that believeth not, and she be pleased to dwell with him, let him not put her away. And the woman who hath a husband that believeth not, and if he be pleased to dwell with her, let her not leave him. For the unbelieving husband is sanctified by the wife, and the unbelieving wife is sanctified by the husband; else were your children unclean; but now are they holy.’ There are, I think, but three acceptations of the term holy in this passage, which can claim attention. Either it imports purity in the highest sense—that which gives a fitness for the church above; or purity in the lower sense—that which gives a fitness for some external privilege of the church on earth; or purity in the lowest sense—that which

is opposed to illegitimacy of birth. In the first of these senses, neither we nor our opponents can understand it. In the last of these senses it has usually been understood by our Baptist brethren; but is this exposition tenable? Can we suppose either the reality or the profession of the Christian faith essential to the validity of the marriage contract, or the legitimacy of the offspring? Would the apostle have pronounced illegitimate the offspring of parents, both of whom were heathens or unbelievers? And yet, if the faith of one of the parents were requisite to the legitimacy of the children, it must follow that, if neither of the parents believed, the children must be illegitimate, and consequently the marriage contract invalid. As this cannot be maintained, the second acceptation of the term holy remains for our adoption, according to which it denotes a fitness for some external privilege of the church. The Jews considered those children as unholy, and not entitled to circumcision, whose parents were in a state of heathenism; and they considered those as holy and entitled to circumcision who were born of Jews or proselytes. In this sense it seems reasonable to suppose that the words of the apostle would be understood by those to whom they were addressed. His decision, then, proceeds upon the principle of the continuance of the ancient connexion between parent and child in the church of God. His decision is, that if either of the parents be a believer, the children are entitled to the same external privilege as if both the parents were believers. But there is only one external privilege of the Christian economy to which this decision can apply, and that privilege is Infant Baptism. In this sense the passage appears to have been understood by Tertullian and the greater number of the early fathers.’ See *Dr. Wall’s History of Infant Baptism*, part I. ch. 4, 15.

It may be added that Dr. Doddridge regarded this passage in a similar light.

5. Pædo-baptists acknowledge that there is no direct and express command to baptise infants; but appeal to the history of the administration of baptism, as strongly implying their participation of it. They argue that the apostles are said to have baptised whole families (Acts xvi. 15, 33; 1 Cor. i. 16); and, therefore, probably infants were comprehended under this general denomination. And they apprehend that they have been able to trace such intimations at least of infant baptism, in the earliest ages of the church as may, to a high degree of probability, prove it to be an apostolic, and consequently divine institution.

Thus *Irenæus*, born about the time of St. John’s death, and probably of Christian parents, mentions infants among the regenerate, i. e. the baptised, as the word generally signifies in his writings. *Justin Martyr*, about forty years after the time of the apostles, speaks of some who had been made disciples from their infancy. *Tertullian*, about 100 years after the apostles, though he advises parents to defer baptising their children, except when their lives were in danger, speaks of the practice as generally received and observed in his time. *Cyprian*,

about 150 years after the apostles, is allowed by all to speak expressly of infant baptism as generally used in the church; and we learn that, in his time, A. D. 253, a question being agitated among sixty-six bishops in the council of Carthage, whether an infant must be kept till he was eight days old before he be baptised, all unanimously gave their opinion to the contrary. There are also various passages, say these writers, that expressly refer to infant baptism in the works of Origen, who was born of Christian parents; and as his father was martyred in the year 202, when he was seventeen years old, the remoter Christians of his family must have been nearly contemporary with the apostles. Again, in the *apostolic constitutions*, which are allowed to be very ancient, express mention occurs of infant baptism, as commanded by Christ. *Math. xix. 14.* Wall contends that, in the first 400 years after the apostles, there appears to be only one, viz. Tertullian, who, in some cases, advised the delay of infant baptism; and another, viz. Gregory, who practised such delay in the case of his own children: 'but no society of men adopted this opinion, nor did any one person pretend to say it was unlawful to baptise infants: and in the next 700 years there is not so much as one man to be found that either spoke for or practised any such delay; and, if truth were to be determined by numbers, the general and uniform practice of the Christian church is very much in favor of infant baptism.'

'It is of great importance,' says Mr. Burder, 'to understand the nature and value of this species of evidence. If any are disposed to question its validity, let them be reminded that the evidence is precisely of the same character with that by which the authenticity and genuineness of the books of the New Testament have been proved, with so much strength of convincing argument, by Dr. Lardner, Dr. Paley, Dr. Chalmers, and other able and successful advocates of the same class. They have established the authenticity of the books of the New Testament, by proving that they have been quoted or alluded to by a continued series of Christian writers, beginning with those who were contemporary with the Apostles, or who immediately followed them. 'This medium of proof,' observes Dr. Paley, 'is of all others the most unquestionable, and is not diminished by the lapse of ages.' By this species of evidence has been firmly established the fact of the general prevalence of infant baptism in the early ages, and the fact that it was then regarded as a practice derived from Apostolic authority. A full and particular induction of the evidence on this point is obviously incompatible with the narrow limits of a single discourse. Nor is an extended statement on the present occasion requisite. The sources whence it is to be derived are open to the enquirer, and without the necessity of referring to the voluminous writings of the Fathers, ample satisfaction may be obtained by consulting the collection exhibited by the learned and indefatigable Dr. Wall, in his *History of Infant Baptism*. A slight sketch of the mass of evidence is all that I can with propriety attempt.'

The Baptists plead, on the other hand, that in-

fants are incapable of complying with the terms required in order to baptism, i. e. repentance and faith, and of receiving those instructions which Christ directed, as previous to it. *Matt. xxviii. 19*, compared with 1 Peter iii. 21. But the Pædo-baptists, to adopt Dr. Rees's summary of their arguments, reply that those instructions and conditions were required only of those who were capable of them. Besides the word *μαθητευασι*, which some understand of teaching, previous to baptism, may signify make disciples: and that infants may be comprehended under that name, some have argued from *Acts xv. 10*. The word used by Justin Martyr, in the passage above cited, and applied to infants, is *εμαθητευσας*. And it has been farther alleged, that the penmen of Scripture, and other Christian writers, have commonly used the word to signify the reception of any one to the number and degree of disciples, as preparatory to subsequent instruction; so that persons thus received, in order to be taught, were, before the instruction itself denominated disciples. Compare *Luke ix. 57*, and *Matt. viii. 19—21*. Eusebius *Evang. Demost. lib. iii. sect 7*, where he styles those who were desirous of learning of Christ, his disciples.

When it is further objected, that infants are incapable of receiving any benefit from baptism; and that, in this case, the ordinance is exposed to contempt, the Pædo-baptists say that, on the contrary, there are many advantages resulting from baptism administered to infants, both to them and principally to their parents, whose immediate act it is; that an ordinance, as in the case of Christ, who was himself baptised, may sometimes be administered to those who are not capable of all the purposes for which it was originally instituted, and which it may subserve with regard to others; and still farther, that this argument against baptising infants, by proving too much, proves nothing: for if infants are incapable of the ends of baptism, under the Christian dispensation, infants under former dispensations were equally incapable of the ends of circumcision; and, therefore, such an institution was useless and improperly enjoined.

The Pædo-baptists differ from the Baptists also as to the mode of administering the Christian ordinance. The former perform it by sprinkling or pouring on water; the latter by the immersion of the whole body, which they contend to be an essential circumstance, see our article *BAPTISM*. In favor of immersion it is pleaded that the word *βαπτίζω*, being derived from *βαπτω*, properly signifies to plunge: on the other hand it is urged, that in this diminutive and derivative form it may signify any method of washing, and is sometimes used in Scripture for washing things which were not dipped in water, but on which it was poured. Compare *Luke xi. 38*, *Mark vii. 4*, and those passages in which the pouring out of the spirit is called baptism, *Acts i. 5*, ch. xi. 15, 16; to which some add 1 Cor. x. 2.

Another argument in favor of immersion is drawn from the account of Philip and the eunuch, *Acts viii. 38, 39*, who went down (*εε*) into the water; and, after the baptism, they are both said to come up (*εε*) out of the water. But many passages might be cited where *εε* signifies to or

unto, and *ex*, from. Matt. xv. 24, chap. xvii. 27, chap. iii. 11. John ix. 1. 2 Cor. v. 1. Rev. xix. 5. It is farther argued, that plunging alone represents our being buried with Christ in baptism. Compare Rom. vi. 4. Col. ii. 2. The Pædo-baptists, though they allow that there is in these passages an allusion to the mode of baptism which then generally prevailed, maintain that, in the institution of the ordinance, there is no declaration that it was chiefly designed to represent this, and persons were baptised before it was generally known that Christ should die and arise from the dead. Our being cleansed from sin seems to be the thing primarily intended, which may properly be represented by pouring on water; and as this more naturally represents the pouring out of the Spirit, the sprinkling us with it, and the sprinkling of the blood of Jesus, it may answer as valuable purposes as that mode, which, more directly, represents death and a resurrection.

'The position which our Baptist brethren advance and which we dispute is,' says a writer we have already quoted, 'to use the very words of a venerable opponent, "that Baptism is immersion; and that Christian baptism is neither more nor less than an immersion of the whole body in water, solemnly performed in the name of the Father, the Son, and the Holy Spirit." Dr. Ryland's Candid Statement.

'In support of this opinion, they lay great stress on the import of the Greek words employed in the New Testament to express the act of baptising. In reply, we endeavour to prove, by a variety of instances and examples, that these terms do not necessarily and uniformly denote immersion, and that they authorise no decision whatever with regard to the manner in which water should be applied in the administration of baptism.

'Again, our opponents appeal to the descriptions given in the New Testament of the circumstances in which baptism was dispensed. In all the instances which they adduce we can find no proof of even one single case of actual immersion; we can find no description of the performance of the rite, even when a river is specified, which is not explicable on the supposition of the person to be baptised going down from the higher ground to the edge of the water (as the most convenient method under existing circumstances), and having water poured or sprinkled on his head. That this was the ancient method of administering baptism, the learned author of *Facts and Evidences*, already alluded to, has rendered in a high degree probable, by adducing various representations in sculpture and in painting of the mode of baptising which lay claim to remote antiquity. In support of the mode of administration we adopt, we appeal to the analogy between baptism with water, and baptism with the Holy Spirit, whose influences are frequently represented by expressions which denote pouring and sprinkling, and also by allusions to the cleansing properties of water, without reference to any particular mode of its application.

'Finally we urge the characteristic spirit of the Christian economy, and argue that in the absence of direct precept, and of clear and indu-

bitable examples of immersion, it is not to be supposed that immersion can be essential to baptism. On the contrary we maintain, that to attach so much importance to the mode of baptism is uncongenial with the spirit of the Christian dispensation; and that the immersion of the whole person, under the circumstances in which it is usually practised (to say nothing with regard to decorum), seems scarcely compatible with the apostolic assertion, that the commandments of our Saviour are not grievous. Such are the leading considerations which induce us to regard immersion as by no means essential to Christian baptism, and to consider the administration of the ordinance by pouring or sprinkling as equally valid, as decidedly preferable.

PÆDOTRIBA, in antiquity, one of the four officers in the ancient Gymnasium, whose business was to teach the exercises mechanically, without their theory.

PÆONIA, piony, a genus of the digynia order, and polyandria class of plants; natural order twenty-sixth, multisiliquæ: *CAL.* pentaphyllous; the petals five; there are no styles: *CAPS.* are polyspermous: species two, both very hardy, which will flourish in any common soil. They are large and herbaceous flowery perennials, with tuberous roots, sending up strong annual stalks from one to three feet in height; terminated by very large flowers of a beautiful red color, and much larger than any rose.

P. officinalis, the common officinal, or male piony, is remarkable for its capsules turning backward, opening and displaying their red inside, together with the numerous seeds, in a singularly agreeable order, appearing very ornamental after the flower is past. The plants may be propagated either by parting the roots or by seed. This plant was formerly celebrated in nervous distempers.

PÆSTUM, a town of Lucania, on the Sinus Pæstinus; called Posidonia by the Greeks, an ancient colony prior to the first Punic war, according to Livy. The utmost taste for art seems to have reigned in this once famous town, and all which could in those days be imagined of ingenious, of delicate, or voluptuous, was to be found within its walls. The climate conspired to complete the charms and graces of the spot, and during the era of Augustus, Horace, Virgil, Propertius, and Ovid, each vied with the other in singing the praises of

'Pæstum's twice-blowing roses.'

This place is now, and has been for many successive ages, a perfect solitude. Towards the year 930 it was sacked by the Saracens. Still, however, that rude people left standing abundant evidences of its former splendor and magnificence, and it was reserved for Robert Guiscard, nearly two centuries after, to destroy what the barbarians had spared. By the directions of this man, all the ancient edifices were demolished, the temples most of them razed to the ground, and their precious remains, such as beautiful columns of verd antique, &c., transported to Salerno, there to serve towards the construction of a church. From the ashes of the old town, however, arose a new one, which was

denominated Pesti, and which was not finally abandoned until 1580. Since that period the ruins of the ancient city do not appear to have attracted notice until 1745. The first modern author who treated of them was the baron Joseph Antonini, in his work on Lewcania, published at Naples in 1745 and following years.

The first artist who measured and made drawings of them was, according to Millin, J. G. Soufflot, a celebrated architect of his day, who built the basilica of St. Genevieve, afterwards called the Pantheon. 'These drawings,' says Millin, 'although executed in 1750, lay for a long time unused in the artist's portfolio, and were not published until 1764 at Paris, by M. Dumont, professor of architecture.'

The ruins of the ancient town of Pæstum are situated in the gulf of Salerno, twenty-two leagues from Naples, and in a vast and mountainous plain. The precise extent of their antiquity is altogether baffling; in all probability it stretched far beyond the conquest of the town by the Romans.

The circumference of the city, in form an angular oblong, which is contracted towards the west, is enclosed by thick walls, partly ruinous, but still lofty in many places, and their height varying from twelve to twenty-one feet. Substantial square towers flank each angle of the walls, and there are several other intermediate ones between these and the gates. There remained a few years ago one gate (towards the east) quite perfect.

These walls enclose a prodigious multitude of ruins, the principal of which are those of three temples, which were denominated by the discoverers the grand temple, the lesser temple, and the basilica. The latter differs from every other temple in existence, having nine columns in the front, with a central range down the middle of the cell, the use of which appears to have been to support the roof.

PAGAHM, an ancient town of the Birman empire, situated on the east side of the Irawaddy, in lat. 21° 9' N., long. 94° 35' E. In remote times this city, says Mr. Hamilton, was the residence of a long dynasty of kings, and is still famous for its numerous temples, to count which is among the proverbial impossibilities of the Birmans. It is said to have been abandoned 500 years ago in consequence of a divine admonition. Scarcely any thing now remains of ancient Pagahm, except its numerous mouldering temples, and the vestiges of an old brick fort, the ramparts of which are still to be traced. Many of the most ancient temples at this place are not solid at the bottom. A well arched dome supports a ponderous superstructure, within which an image of Gaudma sits enshrined. His general posture is sitting on a pedestal, adorned with representations of the sacred leaf of the lotus—the left hand resting on the lap, and the right pendant. In the bazaar the stalls are well provided with rice, pulse, greens, garlic, onions, and fruit; besides fresh fish, gnapæe (putrid sprats), and dead lizards, which latter the Birmans account a great delicacy when well cooked; but the markets contain no butchers' meat.

PA'GAN, *n. s. & adj.* } Sax. *paganisc*; Lat. PA'GANISM, *n. s.* } *paganus* (*pagus*, a village). A heathen; a worshipper of idols; heathenish: paganism is heathenism.

The name of popery is more odious than very *paganism* amongst divers of the more simple sort.

Hooker.

Their cloaths are after such a *pagan* cut too,
That sure they have worn out Christendom.

Shakespeare.

The secret ceremonies I conceal,
Uncouth, perhaps unlawful to reveal;
But such they were as *pagan* use required.

Dryden.

Our labarum, in a state of *paganism*, you have on
a coin of Tiberius. It stands between two other
ensigns.

Addison.

The Christian faith,

Unlike the timorous creed of *pagan* priests,
Was frank, stood forth to view, invited all.

Pollak.

PAGAN (Blaise Francis, count of), an eminent French mathematician, born at Avignon in Provence, March 3d, 1604. He became a soldier at fourteen, and signalled himself in an extraordinary manner on many occasions. After the loss of his eyesight, which prevented him from continuing to serve his country in the field, he published many valuable treatises chiefly on mathematical subjects. His principal works are, *Geometrical Theorems*, *The Theory of the Planets*, and *Astronomical Tables*. He died in Paris, November 18th, 1665; unmarried.

PAGAN (Peter), professor of history and poetry at Marburg. He wrote a history of the Horatii and Curiatii in Latin verse; and various pieces of miscellaneous poetry. He died at Wanfrid, in Lower Hesse, May 20th, 1576.

PAGANALLA, certain festivals observed by the ancient Romans in the month of January. They were instituted by Servius Tullius, who appointed a certain number of villages (*pagi*), in each of which an altar was to be raised for annual sacrifices to their tutelary gods; at which all the inhabitants were to assist, and give presents in money, according to their sex and age, by which means the number of country people was known. The servants upon this occasion offered cakes to Ceres and Tullus, to obtain plentiful harvests.

PAGANELLUS, a species of gobius.

PAGANICA, a town of Naples, in Abruzzo Ultra; eight miles N.N.W. of Aquila.

PAGE, *n. s. & v. a.* } Fr. *page*; Lat. *pagina*. PAG'INAL, *adj.* } One side of the leaf of a book: to mark the pages of a book: paginal is consisting of pages.

If a man could have opened one of the *pages* of the divine counsel, and seen the event of Joseph's being sold, he might have dried up the young man's tears.

Taylor.

An expression proper unto the *paginal* books of our times, but not so agreeable unto volumes or rolling books, in use among the Jews.

Brown.

Thy name to Phœbus and the muses known,
Shall in the front of every *page* be shown.

Dryden.

A printer divides a book into sheets, the sheets into *pages*, the *pages* into lines, and the lines into letters.

Watts.

PAGE, *n. s. & v. a.*. Fr. and Span. *page*; Ital. *paggio*. An attendant: to attend as a page.

Will these mossed trees,
That have out-lived the eagle, *page* thy heels,
And skip when thou pointest out? *Shakspeare*.
The fair goddess Fortune,
Fall deep in love with thee, and her great charms
Misguide thy opposers' swords!
Prosperity be thy *page*! *Shakspeare. Coriolanus*.
He had two *pages* of honor, on either hand one.

Where is this mankind now? who lives to age
Fit to be made Methusalem his *page*. *Donne*.
This day thou shalt my rural *pages* see,
For I have dressed them both to wait on thee.

Dryden.
Philip of Macedon had a *page* attending in his
chamber, to tell him every morning, Remember, O
king, that thou art mortal. *Wals.*

PAGE (William), D. D., was a native of Harrow, Middlesex, or, according to others, of London, and born in 1590. He was educated at Baliol College, Oxford, but quitted in 1619, on being chosen fellow of All Souls. Ten years after he obtained the head-mastership of Reading grammar-school, and the rectory of East Locking, Berks; but, on the breaking out of the civil war, he was ejected from his school as a loyalist, though the profits of his benefice were not sequestered. He is known as the author of a devotional treatise on Genuflexion, in 4to., printed at Oxford in 1631; a Reply to John Hales's Tract on Schism; and a translation of the De Imitatione, &c. of Thomas à Kempis. He died in 1663.

PAGEANT, *n. s., adj., & v. a.* } Lat. *pag-*
PAGEANTRY, *n. s.* } *ma*; Greek, *παιγμα*. A scenic show; a statue in a show: *pageantry* means, pomp; show.

With ridiculous and awkward action,
Which, slanderer, he imitation calls,
He *pageants* us. *Shakspeare. Troilus and Cressida*.
When all our *pageants* of delight were plaid,
Our youth got me to play the woman's part,
And I was trimmed in madam Julia's gown.

Shakspeare.
Strange and unnatural, let's stay and see
This *pageant* of a prodigy. *Cowley*.
Were she ambitious, she'd disdain to own
The *pageant* pomp of such a servile throne.

Dryden.
Such *pageantry* be to the people shown;
There boast thy horse's trappings and thy own.

Id.
Inconveniences are consequent to dogmatizing,
supporting men in the right; but, if they be in the
wrong, what a ridiculous *pageantry* it is to see such
a philosophical gravity set man out a solecism!

Government of the Tongue.
The poets contrived the following *pageant* or machine for the pope's entertainment; a huge floating mountain that was split in the top in imitation of Parnassus. *Addison*.

The breath of others raises our renown,
Our own as soon blows the *pageant* down. *Young*.
Thus unlamented pass the proud away,
The gaze of fools, and *pageant* of a day. *Pope*.

PAGES (Francis Xavier), a French compiler and romance-writer, was born at Aurillac, in the department of Cantal, in 1745, and settled at Paris a short time before the beginning of the Revolution, of which he professed himself an

admirer. He died at Paris, December 21st, 1802. Among his works may be mentioned, *Histoire Secrete de la Révolution Française*, 1796-1801, 6 vols. 8vo., which was translated into English, Italian, and German; and *Nouveau Voyage autour du Monde, en Asie, en Amérique, et en Afrique, précédé d'un Voyage en Italie*, 1797, 3 vols. 8vo.

PAGES (Pierre Marie François, vicomte de), a French navigator, of a noble family, was born at Toulouse in 1748. He entered into the navy at the age of nineteen, and, in 1767, embarked at Cape François in St. Domingo, on a voyage with a view to explore the Indian Seas, and travel through China and Tartary to the Northern Ocean. He arrived at the Philippine Islands in October 1768, and, it being impossible to penetrate China, went by sea to Bassora, and, travelling through the desert to Syria, reached France in December 1771. In 1773 he sailed in Kerguelin's expedition towards the South Pole; and on his return made a voyage in a Dutch vessel employed in the whale fishery in the North Seas, when he proceeded as far as 81° 30' N. lat. Pages obtained, as the reward of his services, the rank of captain, and the cross of St. Louis, and was chosen a correspondent of the Academy of Sciences. He served in the American war, and after the peace of 1783 retired to St. Domingo, where he was murdered by the negroes in 1793. He published a work which Humboldt mentions with approbation, *Voyages autour du Monde*, 1767-1776, 2 vols. 8vo.

PAGI (Anthony), a very celebrated cordelier, one of the ablest critics of his time, born at Rogne in Provence, in 1624. He took the habit in the convent at Arles, in 1641, and was four times provincial of his order; he died in 1699. His most considerable work is, *A Critique upon the Annals of Baronius*; the best edition of which is that in 4 vols. folio, Geneva, 1705.

PAGI (Francis), nephew of Anthony, and a member of the same order, wrote *A Chronological Abridgment of the History of the Popes*, in Latin, 3 vols. 4to.

PAGNINUS (Sanctes), an Italian Dominican, eminent for his skill in oriental languages and biblical learning, was born at Lucca in 1466, and became afterwards an ecclesiastic of the order of St. Dominic. He was the author of translations of both the Old and New Testaments, of an Hebrew Lexicon, and an Hebrew Grammar. He died in 1536, aged seventy.

PAGO, a small island of the gulf of Quarnero, in the Adriatic, belonging to the circle or district of Zara, in Austrian Dalmatia. It is situated opposite to the coast of Croatia, and is thirty-four miles in length, but narrow; and a great part of the interior is occupied by an inlet of the sea. Its area is about fifty square miles; its population 4000. In the climate the extremes of heat and cold predominate, the island being exposed in winter to the bora, a keen and piercing wind from Croatia, while in the summer the heat is such as to ripen grapes. The chief exports are wine and salt. Sage, aromatic herbs, and coal, are abundant. The inhabitants have been alternately subject to the Venetians, and to

their neighbours on the Greek coast. Pago, the chief place of the island, is situated on a bay in the interior, twenty-two miles north-west of Zara, and contains 1000 inhabitants.

PA'GOD, *n. s.* Pers. and Hind. *boit, khoda*, or *kuda*, i. e. the house of God. An Indian temple or idol.

See thronging millions to the *Pagod* run,
And offer country, parent, wife, or son. *Pope*.
They worship idols called *pagods*, after such a terrible representation as we make of devils.

Stillingfleet.

PAGOD, or PAODA, a name whereby the East Indians call the temple in which they worship their gods. Before they build a pagod they consecrate the ground as follows:—after having enclosed it with boards or palisades, when the grass is grown on the ground they turn an ash-colored cow into it, who stays there a whole day and night; and, as cow-dung is thought by the Indians to be of a very sacred nature, they search for this sacred deposit, and, having found it, they dig there a deep pit, into which they put a marble pillar, rising considerably above the surface of the earth. On this pillar they place the image of the god to whom the pagod is to be consecrated. After this the pagod is built round the pit in which the pillar is fixed. The pagod usually consists of three parts: the first is a vaulted roof supported on stone or marble columns. It is adorned with images, and, being open, all persons, without distinction, are allowed to enter it: the second part is filled with grotesque and monstrous figures, and nobody is allowed to enter it but the brahmins themselves: the third is a kind of chancel, in which the statue of the deity is placed: it is shut up with a very strong gate.

We cannot afford room to go into detail on the several pagodas of different nations and their peculiar circumstances; and shall therefore content ourselves with offering the reader some account of the most interesting structures of this class in existence. An excellent account of the sculptures, &c., at Mavalipuram, a few miles north of Sadras, and known to seamen by the name of the seven pagodas, is given in the *Asiatic Researches*. The monuments appear to be the ruins of some great city decayed many centuries ago. 'They are situated close to the sea, between Covelong and Sadras, somewhat remote from the high road that leads to the different European settlements; and, when visited in 1776, there was still a native village adjoining to them, which retained the ancient name, and in which a number of brahmins resided that seemed perfectly well acquainted with the subjects of most of the sculptures to be seen there.' 'Proceeding on, by the foot of a hill on the side facing the sea, there is a pagoda rising out of the ground, of one solid stone, about sixteen or eighteen feet high, which seems to have been cut upon the spot, out of a detached rock that has been found of a proper size for that purpose. The top is arched, and the style of architecture, according to which it is formed, different from any now used in those parts.' Beyond this a numerous group of human figures in bas relief, considerably larger than life, attract attention.

They represent considerable persons, and their exploits, many of which are now very indistinct through the injuries of time, assisted by the corroding nature of the sea air; while others, protected from that element, are as fresh as when recently finished. The hill, which is at first or easy ascent, 'is in other parts rendered more so by very excellent steps cut out in several places, where the communication would be difficult or impracticable without them. A winding stair of this sort leads to a kind of temple cut out of the solid rock, with some figures of idols in high relief upon its walls, very well finished and perfectly fresh, as it faces the west, and is therefore sheltered from the sea air.' This temple our author conjectures to have been a place of worship appertaining to a palace; some remains of which still exist, and to which there is a passage from the temple by another flight of steps. This finishes the objects 'on that part of the upper surface of the hill, the ascent to which is on the north; but, descending thence, you are led round the hill to the opposite side, in which there are steps cut from the bottom to a place near the summit, where is an excavation that seems to have been intended for a place of worship, and contains various sculptures of Hindoo deities. The most remarkable of these is a gigantic figure of Vishnou (see POLYTHEISM) asleep on a kind of bed, with a huge snake wound about in many coils by way of pillow for his head; and these figures, according to the manner of this place, are all of one piece, hewn from the body of the rock.' These works, however, although they are unquestionably stupendous, are, in our author's opinion, surpassed by others about a mile and a half south of the hill. 'They consist of two pagodas of about thirty feet long by twenty feet wide, and about as many in height, cut out of the solid rock, and each consisting originally of one single stone. Near these also stand an elephant full as big as life, and a lion much larger than the natural size, but very well executed, each hewn also out of one stone. The great rock above described is at some distance from the sea, perhaps fifty or 100 yards, and in that space the Hindoo village before mentioned stood in 1776. But close to the sea are the remains of a pagoda built of brick, and dedicated to Sib, the greatest part of which has evidently been swallowed up by that element; for the door of the innermost apartment, in which the idol is placed, and before which there are always two or three spacious courts surrounded with walls, is now washed by the waves, and the pillar used to discover the meridian at the time of founding the pagoda is seen standing at some distance in the sea. In the neighbourhood of this building there are some detached rocks, washed also by the waves, on which there appear sculptures, though now much worn and defaced. And the natives declared to the writer of this account, that the more aged people among them remembered to have seen the tops of several pagodas far out in the sea, which, being covered with copper (probably gilt), were particularly visible at sun-rise, as their shining surface used then to reflect the sun's rays; but that now that effect was no longer produced, as the copper had since be-

come incruusted with mould and verdigris. From these circumstances it is probable that the magnificent city, of which these appear to be part of the ruins, has been destroyed partly by an earthquake, by which the rock was rent, and partly by a sudden inundation of the sea occasioned by this commotion of the earth.

PAGODA, or PAGOD, is also the name of a gold and silver coin, current in several parts of the East Indies.

PAIL, *n. s.* } Span. *paila*; Ital. *pacol*; Lat. *PAULFUL*. } *patella*. A wooden vessel to carry water or milk.

Yon same cloud cannot chuse but fall by *pailfuls*. *Shakespeare.*

In the country, when wool is new shorn, they set *pails* of water in the same room, to increase the weight. *Bacon.*

New milk that all the winter never falls, And all the summer overflows the *pails*. *Dryden.*

PAILMALL, *n. s.* The same with pall mall, a beater or mall to strike the ball. Violent; boisterous.

A stroke with a *pailmail* beetle upon a bowl makes it fly from it. *Digby on the Soul.*

PAIMBEUF, an important, though small, post-town and sea-port, the chief place of a sub-prefecture in the department of the Lower Loire, France, containing about 4000 inhabitants, with an inferior court of justice, a drawing school, a maritime syndicate, an agricultural society, and a communal college. This town, which is situated in a marshy country, on the left bank of the Loire, at the commencement of the eighteenth century was only a hamlet, inhabited by a few fishermen; its situation at the mouth of a great river, its port, where the largest vessels can anchor, and its proximity to Nantes, have rendered it a very important place. It consists of one well-built street, on a long quay, on which vessels disembark their cargoes, that are then conveyed in lighters as far as Nantes; here also they receive their cargoes on putting out to sea. Here are manufactories of bricks and tiles, and docks for the building and refitting of ships. The trade of the place consists chiefly in grain. It is thirty miles W. N. W. of Nantes, fifteen south of Pornie, twenty-seven south of Bourgneuf, and 315 south-west of Paris.

PAIN, *n. s.* & *v. a.* } Sax. *pin*; Fr. *peine*; *PAINFUL*, } Lat. *pena*. Punish- *PAINFULLY*, *adv.* } ment denounced; pe- *PAINFULNESS*, *n. s.* } nalty; sensation of un- *PAINLESS*, *adj.* } easiness or anguish: in *PAINSTAKER*, *n. s.* } the plural, labor; work; *PAINSTAKING*, *adj.* } toil: to afflict; torment; make uneasy or anxious: with the reciprocal pronoun (little used), to labor: the adjective, adverb, and substantive follow these senses: painless is free from, or void of pain: pains-taking, laborious; industrious.

I am *pained* at my very heart, because thou hast heard, O my soul, the sound of the trumpet. *Jeremiah iv. 19.*

She bowed herself and travelled; for her *pains* came upon her. *1 Samuel iv. 19.*

One labourer and taketh *pains*, maketh haste, and is so much the more behind. *Ecclesi. xi. 11.*

When I thought to know this, it was too *painful* for me. *Psalms lxxiii. 16.*

T'one *pains* in a cottage dothe take, When t'other trim bowers do make. *Tamer.*
Though the lord of the liberty do *pain* himself to yield equal justice unto all, yet can there not but great abuses lurk in so absolute a privilege. *Spenser.*

He soft arrived on the grassy plain, And fairly paced forth with easy *pain*. *Id.*
Painfulness by feeble means shall be able to gain that which in the plenty of more forcible instruments is through sloth and negligence lost. *Hooker.*

Many have taken the *pains* to go out of Europe to reside as friars in America. *Abbot.*

The *painful* service, The extreme dangers, and the drops of blood Shed for my thankless country, are required But with that surname. *Shakespeare. Coriolanus.*

On *pain* of death no person being so bold, Or daring hardy, as to touch the list. *Shakespeare.*
Such as sit in ease at home raise a benefit out of their hunger and thirst, that serve their prince and country *painfully* abroad. *Raleigh's Essays.*

Because Eusebius hath yet said nothing, we will, by way of mulct or *pain*, lay it upon him. *Bacon.*

As the *pains* of the touch are greater than the offences of the other senses; so likewise are the pleasures. *Id.*

There the princesses determining to bathe themselves, thought it was so privileged a place, upon *pain* of death, as nobody durst presume to come thither. *Sidney.*

With diamond in window-glass she graved, Erone die, and end this ugly *painfulness*. *Id.*

When of the dew, which the eye and ear do take, From flow'rs abroad and bring into the brain, She doth within both wax and honey make; This work is hers, this is her proper *pain*. *Davies.*

Robin red-breast *painfully* Did cover them with leaves.

Children in the Wood.
The *pains* they have taken was very great. *Clarendon.*

Pain is perfect misery, the worst Of evils; and, excessive, overturns All patience. *Milton's Paradise Lost.*

Is there yet no other way, besides These *painful* passages, how we may come To death? *Id.*

When a lion shakes his dreadful mane And angry grows, if he that first took *pain* To tame his youth, approach the haughty beast, He bends to him, but frights away the rest. *Waller.*
If health be such a blessing, it may be worth the *pains* to discover the regions where it grows, and the sorings that feed it. *Temple.*

The deaf person must be discreetly treated, and by pleasant usage wrought upon to take some *pains* at it, watching your seasons and taking great care, that he may not hate his task, but do it cheerfully. *Holder.*

They called him a thousand fools for his *pains*. *L'Estrange.*

If the church were once thus settled, we need then be in less *pain* for the religion of our prince. *Lesley.*

He *pained* himself to raise his note. *Dryden.*

He would believe, but yet is still in *pain*; Presses the pulse, and feels the leaping vein. *Id.*
Her nimble feet refuse

Her wonted speed, and she took *pains* to lose. *Id.*

Surat he took, and thence preventing fame, By quick and *painful* marches hither came. *Id.*

To dress the vines new labour is required,
Nor must the *painful* husbandman be tired. *Id.*

Interpose, on *pain* of my displeasure,
Betwixt their swords. *Id. Don Sebastian.*

If philosophy be uncertain, the former will conclude it vain; and the latter may be in danger of pronouncing the same on their *pains*, who seek it, if after all their labour they must reap the wind, mere opinion and conjecture. *Glanceville.*

Excess of cold, as well as heat, *pains* us, because it is equally destructive to that temper which is necessary to the preservation of life. *Locks.*

No custom can make the *painfulness* of a debauch easy or pleasing to a man; since nothing can be pleasant that is unnatural. *South.*

Pleasure arose in those very parts of his leg, that just before had been so much *pained* by the fetter. *Addison.*

None shall presume to fly under *pain* of death, with wings of any other man's making. *Id.*

Evils have been more *painful* to us in the prospect, than by their actual pressure. *Id.*

I'll prove a true *painstaker* day and night,
I'll spin and card, and keep our children tight. *Gay.*

It bid her feel

No future *pain* for me; but instant wed

A lover more proportioned to her bed. *Prior.*

What *pain* do you think a man must feel, when his conscience lays this folly to his charge? *Law.*

The same with *pains* we gain, but lose with ease,
Sure some to vex, but never all to please. *Pope.*

Long abstinence may be *painful* to acid constitutions, by the uneasy sensation it creates in the stomach. *Arbuthnot.*

A reasonable clergyman, if he will be at the *pains*, can make the most ignorant man comprehend what is his duty, and convince him that he ought to perform it. *Swift.*

Great abilities, when employed as God directs, do but make the owners of them greater and more *painful* servants to their neighbours: however they are real blessings when in the hands of good men. *Swift.*

PAINE (Thomas), a celebrated deist and political demagogue of the American and French Revolutions, was born at Thetford, in Norfolk, in 1737, where his father carried on the business of a staymaker. All sects have had their dis-graceful members and offspring. Paine's father, a peaceful and industrious Quaker, connects him with the exemplary sect of the Friends. He received his education at the grammar-school of his native place, but attained to little beyond the rudiments of Latin; but he seems to have paid considerable attention to arithmetic, and to have evinced an early predilection for the mathematics. His first application to business was in the trade of his father, which he followed in London, Dover, and Sandwich, where he married. Afterwards he became a grocer and excise-man at Lewes in Sussex. This situation he lost for some misdemeanor, but was subsequently restored on petition, until finally dismissed for keeping a tobacconist's shop, which was thought to interfere with his official duties. After this, however, so well were the public authorities of his native country disposed to serve him, that one of the commissioners of excise gave him a letter of recommendation to Dr. Franklin, then a colonial agent in London, who recommended him to go to America. At this period

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he had first exercised his talents as a writer, by drawing up a pamphlet, recommending the advance of the salaries of excisemen.

His age at this time was thirty-seven. His first engagement in Philadelphia was with Mr. Aitkin, a respectable bookseller, who, in January 1775, commenced the Pennsylvania Magazine, the editorship of which work became the business of Mr. Paine, for which he had a salary of £50 currency a year. According to Mr. Cheetham, this work was well supported by him, and it was here that he published his song upon general Wolfe, which by his biographer is called beautiful; but taste either in prose or poetry does not appear to us to be among Mr. Cheetham's biographical qualifications.—When Dr. Rush of Philadelphia suggested to Paine the propriety of preparing the Americans for a separation from Great Britain, it seems that he seized with avidity the idea, and immediately commenced his famous pamphlet on that measure, which being shown in MS. to Drs. Franklin and Rush, and Mr. S. Adams, was, after some discussion, entitled, at the suggestion of Dr. Rush, Common Sense.

For this production the legislation of Pennsylvania voted him £500.; he also received the degree of M. A. from the university of the same province, and was chosen a member of the American Philosophical Society. We hope the literary honors were communicated in a tongue which he could read; as his mortal aversion to learned languages is well known. To these rewards was soon afterwards added the office of clerk to the committee for foreign affairs, which, although a confidential situation, scarcely justified him, says one of his friendly biographers, in assuming the title of 'late secretary for foreign affairs,' which he did in the title-page of the Rights of Man.

'Bitterly,' says Mr. Cheetham, 'as he pretended to be opposed to titles, when grasping the pillars of the British government he endeavoured to subvert it, he was yet so fond of them, in reality, that he not only assumed to himself a title to which he had no claim, but he seems to have gloried in the fraudulent assumption. In his title-page of his Rights of Man, he styles himself 'Secretary for Foreign Affairs to the congress of the United States, in the late war.' The foreign affairs of the United States were conducted by a committee, or board, of which he was secretary, or clerk; clerk more properly, at a very low salary. His business was merely to copy papers, number and file them, and, generally, to do the duty of what is now called a clerk in the foreign department; he was, however, determined to give himself a higher title. Unsubstantial in essence as superadditions to names are, he nevertheless liked them, and seemed to be aware that, universally, they possess a charm to which he was by no means insensible. From this, and many other circumstances, we may infer that his objections to being himself a lord of the bedchamber, or a groom of the stole, a master of the hounds, or a gentleman in waiting, would not have been stronger than were his wishes to be retained in the excise.'

While in this office, he published a series of

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appeals on the nature of the pending struggle between the colonies and Great Britain, which he denominated the Crisis. In 1779 he was obliged to resign his secretaryship, owing to a controversy with Mr. Silas Deane, whom he detected in a fraudulent attempt to profit by conveying the secret supplies of warlike stores from France. Paine divulged the real state of the case, which was deemed an injurious breach of trust, and one which might alienate the French court from its creditable services to the new republic. The next year, however, he obtained the subordinate appointment of clerk to the assembly of Pennsylvania; and in 1785, on the rejection of a motion to appoint him historiographer to the United States, received from congress a donation of 3000 dollars, and 500 acres of highly cultivated land from the state of New York. In 1787 he embarked for France, with a letter of recommendation from Dr. Franklin to the Duke de la Rochefoucault, in which he calls him 'an ingenious honest man, the author of a famous piece entitled *Common Sense*.' From Paris he returned to England, with a view to the prosecution of a project relative to the erection of an iron bridge, of his invention, at Rotherham, in Yorkshire, and which was in fact the first bridge of this kind suggested in modern times. See *IRON BRIDGES*. In the course of the following year he was arrested for debt, when he was bailed by some American merchants, and went to Paris in 1791 to publish, under the name of Achilles Duchatelliet, a tract recommending the abolition of royalty. On returning to this country, he wrote the first part of his *Rights of Man*, in answer to Mr. Burke's *Reflections on the French Revolution*. The second part was published early in 1792; and, on the 21st of May that year, a proclamation was issued against wicked and seditious publications, alluding to, but not naming, our author's productions. On the same day the attorney-general commenced a prosecution against him.

On these circumstances his American biographer remarks:—'Whatever party and passion, prejudice and malignity, ignorance and injustice, may roundly assert, Paine experienced from the British government a mildness, a forbearance, which no man urging amongst us, in the boldest language of sedition, a dissolution of the union, a destruction of the national government, and a consequent civil war, could expect from the government of the United States. The first part of the *Rights of Man*, not a jot less intemperate and rebellious than the second, was published not only with impunity, but without notice from the government. I do not mention the fact in commendation; Paine ought to have been punished. Alarm, if the government was alarmed, was a poor apology. When did fear beget respect? When did imbecility avert danger?' (p. 124.)

'The king's proclamation was an act of graciousness. The work was clearly seditious in the malice of intention, as well as in the criminality of object. As thousands of persons besides the booksellers had industriously published it, the law, if the administrators of it had been vindictively inclined, had full scope for operation. The proclamation notified to the kingdom

the diabolical intentions of the author, the tendency of his demoralising work, and the penalties which all publishers of it incurred of those admirable laws, not which were made for the case, but of those ancient and free laws which the United States have adopted for the government of the press. It was therefore preventive, not retributive justice.' (p. 156.)

We continue our memoir, in the language of Mr. Cheetham, to the close of his connexion with this country:—'Loyal associations now sprung up to counteract the revolutionary efforts of the revolution clubs. Passion met passion, until, in the struggle, on the one side for a dissolution of the government, on the other for its existence, the nation became more and more agitated. In this state of things, Paine published, about August 1792, his *Address to the Addressors*. This is a miserable lampoon on the orators in parliament who had spoken on the side of the king's proclamation, as well as on those placemen into whose offices Paine would willingly have crept, before he left England, in the year 1774. He states that a prosecution had been commenced against him; declares the incompetency of a jury to decide on work so recondite and important as the *Rights of Man*; talks quite philosophically upon the propriety of taking the sense of the nation upon it, by polling each man; pronounces the laws in relation to the press as fundamentally bad, the administration of them by the courts as notoriously corrupt, and denies that the *Rights of Man* is seditious, for that 'it contains a plan for augmenting the pay of the soldiers, and meliorating the condition of the poor!' While he was preparing this stuff for the press, he published letters to the chairmen of several of the meetings, which were conveyed to compliment the king on his proclamation. He was now evidently awed by the vigor of the government, and the patriotic spirit of the nation. All over England he was carried about in effigy, with a pair of stays under his arm; and the populace, staymakers and all, alternately laughed and swore at the impudent attempts of a staymaker to destroy their government. His trial was to come on in the following December. Whilst he foresaw, and no doubt dreaded, the imprisonment which awaited him, a French deputation announced to him in London, in the preceding September, that the department of Calais had elected him a member of the national convention. This was doubly grateful, grateful in the escape which it afforded him from a just punishment, without the imputation of cowardice; grateful in the honor which bloody anarchists had conferred upon him by electing him a member of their order. Without delay he proceeded to Dover, where a custom-house officer examined his baggage, and finally let him pass. He had not, however, sailed from Dover for Calais more than twenty minutes, when an order was received from the government to detain him. He states his detention and examination at Dover, in a letter to Mr. Dundas, dated Calais, September 15th, 1792.' (p. 160.)

He arrived in this month at Paris and was an advocate in the convention for the trial of Louis XVI.; but he voted against the sentence of

death passed on him, proposing his imprisonment during the war, and his subsequent banishment. This conduct, however, offended the Jacobins, and, towards the close of 1793, he was excluded from the convention on the ground of his being a foreigner (though he had been naturalised), arrested, and committed to the prison of the Luxembourg. Just before his confinement he had finished the first part of his *Age of Reason*, being an investigation of true and fabulous theology; and, having confided it to the care of his friend Joel Barlow, it was published. He was now taken ill, to which circumstance he ascribes his escape from the guillotine; and on the fall of Robespierre was released. In 1795 he published, at Paris, the second part of his *Age of Reason*, and in May, 1796 addressed to the Council of Five Hundred, *The Decline and Fall of the System of Finance in England*; and published his pamphlet entitled *Agrarian Justice*. He remained in France till August, 1802, when he embarked for America. Paine had at this time lost his wife (the year following his marriage), and, after a cohabitation of three years and a half, had separated from a second several years before by mutual consent.

Among his other lucubrations in France we find the following sage eulogy on the number fixed upon to constitute the directory: 'After preferring a plural to an individual executive, the next question is,' he observes, 'What shall be the number of the plurality?' And here we request the grave attention of some of our most accurate calculators of the class of reformists.

'Three are too few, either for the variety or the quantity of business. The constitution has adopted five, and experience has shown that this number of directors is sufficient for all the purposes, and therefore a greater number would only be an unnecessary expense. The number which France had hit upon (and which I agree with him,' says Mr. Cheetham, 'is quite sufficient), he seems to think, designed by nature for all governments, although human wisdom, in no part of the world, except in France, has as yet adopted it. Nature,' he says, 'has given us exactly five senses, and the same number of fingers and toes; pointing out to us, by this kindness, the propriety of an executive directory of five, precisely as in France. If one sense,' he continues, 'had been sufficient, she would have given us no more; an individual executive,' he therefore infers, 'is unnatural and unphilosophical, individuality being exploded by nature.' Surely tyranny never had a more fawning parasite, freedom a more decided enemy,' p. 219.

This writer, 'supposing him (Paine) to be a gentleman,' was employed to engage a room for him at Lovett's hotel, New York. 'On his arrival' (in 1802), he says, 'about ten at night he wrote me a note desiring to see me immediately. I waited on him at Lovett's, in company with Mr. George Clinton, jun. We rapped at the door; a small figure opened it within, meanly dressed, having on an old top coat, without an under one; a dirty silk handkerchief loosely thrown round his neck; a long beard of more than a week's growth; a face well carbuncled,

fiery as the setting sun, and the whole figure staggering under a load of inebriation. I was on the point of enquiring for Mr. Paine, when I saw in his countenance something of the portraits I had seen of him. We were desirous to be seated. He had before him a small round table, on which were a beef-steak, some beer, a pint of brandy, a pitcher of water, and a glass. He sat eating, drinking, and talking, with as much composure as if he had lived with us all his life. I soon perceived that he had a very retentive memory, and was full of anecdote. The bishop of Landaff was almost the first word he uttered, and it was followed by informing us that he had in his trunk a manuscript reply to the bishop's Apology. He then, calmly mumbling his steak, and ever and anon drinking his brandy and beer, repeated the introduction to his reply, which occupied him nearly half an hour. This was done with deliberation, the utmost clearness, and a perfect apprehension, intoxicated as he was, of all that he repeated. Scarcely a word would he allow us to speak. He always, I afterwards found, in all companies, drunk or sober, would be listened to: in this regard there were no *rights of men* with him, no equality, no reciprocal immunities and obligations, for he would listen to no one.'

On the 13th of October 1802 he arrived at Baltimore, under the protection of Mr. Jefferson. But it appears that curiosity induced nobody of distinction to suffer his approach. While at his hotel he was principally visited by the lower class of emigrants from England, Scotland, and Ireland, who had there admired his *Rights of Man*. With them it appears 'he drank grog in the tap-room morning, noon, and night, admired and praised, strutting and staggering about, showing himself to all, and shaking hands with all. The leaders of the party to which he had attached himself paid him no attention.' He had brought to America with him a woman, named Madame Bonneville, whom he had seduced away from her husband, with her two sons; and whom he seems to have treated with the utmost meanness and tyranny. Mr. Cheetham gives the following account of his manner of living at this time:—

'In the spring of 1804 he returned to his farm at New Rochelle, Purdy having left it, taking with him the two Bonneville's, and leaving their mother in the city. Not chosing to live upon the farm himself, he hired one Christopher Derick, an old man, to work it for him. While Derick was husbanding the farm, Paine and the two young Bonneville's boarded sometimes with Mr. Wilburn, in Gold-street, in the city, but principally with Mr. Andrew Dean, at New Rochelle. Mrs. Dean, with whom I have conversed, tells me that he was daily drunk at their house, and that in his few sober moments he was always quarrelling with her, and disturbing the peace of the family. She represents him as deliberately and disgustingly filthy. It is not surprising, therefore, that she importuned her husband to turn him out of the house; but owing to Mr. Dean's predilection for his political writings, her importunities were, for several weeks, unavailing. Constant domestic disquiet very

naturally ensued, which was increased by Paine's peevishness and violence. One day he ran after Miss Dean, a girl of fifteen, with a chair whip in his hand, to whip her, and would have done so but for the interposition of her mother. The enraged Mrs. Dean, to use her own language, 'flew at him.' Paine retreated up stairs into his private room, and was swiftly pursued by his antagonist. The little drunken old man owed his safety to the bolts of his door. In the fall of the year Mrs. Dean prevailed with her husband to keep him in the house no longer. The two Bonnevilles were quite neglected. From Dean's he went to live on his farm. Here one of his first acts was to discharge old Derick, with whom he had wrangled, and to whom he had been a tyrant from the moment of their engagement. Derick left him with revengeful thoughts.

'Being now alone, except in the company of the two Bonnevilles, of whom he took but little notice, he engaged an old black woman of the name of Betty to do his housework. Betty lived with him but three weeks. She seems to have been as intemperate as himself. Like her master she was every day intoxicated. Paine would accuse her of stealing his New England rum, and Betty would retort by calling him an old drunkard. Often, Mrs. Dean informs me, would they both lie prostrate on the same floor, dead-drunk, sprawling and swearing and threatening to fight, but incapable of approaching each other to combat. Nothing but inability prevented a battle.' p. 241.

We must not withhold from our readers part of a letter written to Paine from an illiterate brother democrat and infidel, after a sordid quarrel which had taken place between them:—

'From the first time I saw you in this country, to the last time of your departure from my house, my conscience bears me testimony that I treated you as a friend and a brother, without any hope of extra rewards, only the payment of my just demand. I often told many of my friends, had you come to this country without one cent. of property, then, as long as I had one shilling, you should have a part. I declare when I first saw you here I knew nothing of your possessions, or that you were worth £400 per year, sterling. I, Sir, am not like yourself. I do not bow down to a little paltry gold at the sacrifice of just principles. I, Sir, am poor, with an independent mind, which perhaps renders me more comfort than your independent fortune renders you. You tell me further that I shall be excluded from any thing, and every thing, contained in your will. All this I totally disregard. I believe, if it was in your power, you would go further, and say you would prevent my obtaining the just and lawful debt that you contracted with me; for when a man is vile enough to deny a debt, he is not honest enough to pay without being compelled. I have lived fifty years on the bounty and good providence of my Creator, and I do not doubt the goodness of his will concerning me. I likewise have to inform you that I totally disregard the powers of your mind and pen; for should you, by your conduct, permit this letter to appear in public, in vain may you attempt to print or publish any thing afterwards. Do look back to my

past conduct respecting you, and try if you cannot raise one grain of gratitude in your heart towards me for all the kind acts of benevolence I bestowed on you. I showed your letter, at the time I received it, to an intelligent friend; he said it was a characteristic of the vileness of your natural disposition, and enough to damn the reputation of any man. You tell me that I should have come to you, and not written the letter. I did so three times; and the last you gave me the ten dollars, and told me you were going to have a stove in a separate room, and then you would pay me. One month had passed and I wanted the money, but still found you with the family that you resided with; and delicacy prevented me to ask you for pay of board and lodging; you never told me to fetch the account, as you say you did. When I called the last time but one, you told me to come on the Sunday following, and you would pay or settle with me; I came according to order, but found you particularly engaged with the French woman and her two boys, &c.

'You frequently boast of what you have done for the woman above alluded to; that she and her family have cost you 2000 dollars; and since you came the last time to York you have been bountiful to her, and given her 100 dollars per time. This may be all right. She may have rendered you former and present secret services, such as are not in my power to perform; but at the same time I think it would be just in you to pay your debts. I know that the poor black woman, at New Rochelle, that you hired as a servant, and I believe paid every attention to you in her power, had to sue you for her wages before you would pay her, and Mr. Shute had to become security for you.

'A respectable gentleman from New Rochelle called to see me a few days past, and said that every body was tired of you there, and no one would undertake to board and lodge you. I thought this was the case, as I found you at a tavern, in a most miserable situation. You appeared as if you had not been shaved for a fortnight, and as to a shirt it could not be said that you had one on; it was only the remains of one, and this likewise appeared not to have been off your back for a fortnight, and was nearly the color of tanned leather, and you had the most disagreeable smell possible; just like that of our poor beggars in England. Do you not recollect the pains I took to clean and wash you? That I got a tub of warm water and soap, and washed from head to foot, and this I had to do three times before I could get you clean. I likewise shaved you and cut your nails, that were like birds' claws. I remember a remark that I made to you at that time, which was, that you put me in mind of Nebuchadnezzar, who was said to be in this situation. Many of your toenails exceeded half an inch in length, and others had grown round your toes, and nearly as far under as they extended on the top. Have you forgotten the pains I took with you when you lay sick wallowing in your own filth? I remember that I got Mr. Hooton (a friend of mine, and whom I believe to be one of the best hearted men in the world) to assist me in removing and

cleaning you. He told me he wondered how I could not it; for his part he would not like to do the same again for ten dollars. I told him you were a fellow being, and that it was our duty to assist each other in distress. Have you forgotten my care of you during the winter you staid with me? How I put you in bed every night, with a warm brick to your feet, and treated you like an infant one month old? Have you forgotten likewise how you destroyed my bed and bedding by fire, and also a great coat that was worth ten dollars?

'I remember, during one of your stays at my house, you were sued in the justice's court by a poor man, for the board and lodging of the French woman, to the amount of about thirty dollars; but as the man had no proof, and only depended on your word, he was non-suited, and a cost of forty-two shillings thrown upon him. This highly gratified your unfeeling heart. I believe you had promised payment, as you said you would give the French woman the money to go and pay it with. I know it is customary in England that when any gentleman keeps a lady, that he pays her board and lodging. You complain that you suffered with the cold, and that there ought to have been a fire in the parlour. But the fact is, that I expended so much money on your account, and received so little, that I could not go to any further expense, and if I had I should not have got you away. A friend of yours that knew my situation told you that you ought to buy a load of wood to burn in the parlour; your answer was that you should not stay above a week or two, and did not want to have the wood to remove; this certainly would have been a hard case for you to have left me a few sticks of wood.

'Now, Sir, I think I have drawn a complete portrait of your character; yet to enter upon every minutia would be to give a history of your life, and to develop the fallacious mask of hypocrisy and deception under which you have acted in your political as well as moral capacity of life. There may be many grammatical errors in this letter. To you I have no apologies to make; but I hope the candid and impartial public will not view them 'with a critic's eye.'

'WILLIAM CARVER.'

'Thomas Paine, New York, Dec. 2, 1806.'

'He lived at Ryder's until 4th of May, 1809, about eleven months; during which time, except the last ten weeks, he got drunk regularly twice a day. As to his person, said Mr. Ryder, we had to wash him like a child, and with much the same coaxing; for he hated soap and water. He would have the best of meat cooked for him, eat a little of it, and throw away the rest, that he might have the worth of the money which he paid for his board. He chose to perform all the functions of nature in bed.—When censured for it he would say, 'I pay you money enough, and you shall labor for it.'

'He returned,' says Mr. Cheetham, 'to his farm at New Rochelle, taking with him Madame Bonneville and her sons. On his arrival he hired Rachel Gidney, a black woman, to cook for him. Rachel continued with him about two

months. But as he never thought of paying for services, or for meat, or for any thing else, Rachel had to sue him for five dollars, the amount of her wages. She got out a warrant, on which he was apprehended, and Mr. Shute, one of his neighbours and political admirers, was his bail. The wages were finally obtained, but he thought it hard that he should be sued in a country for which he had done so much!'

It is now time to bring this article to a close. We will conclude it with a passage from a letter written by Dr. Manley, who attended this extraordinary person in his last illness, in answer to enquiries from Mr. Cheetham:—

'During the latter part of his life, though his conversation was equivocal, his conduct was singular. He would not be left alone night or day. He not only required to have some person with him, but he must see that he or she was there, and would not allow his curtain to be closed at any time; and if, as it would sometimes unavoidably happen, he was left alone, he would scream and holla until some person came to him. When relief from pain would admit, he seemed thoughtful and contemplative, his eyes being generally closed, and his hands folded upon his breast, although he never slept without the assistance of an anodyne. There was something remarkable in his conduct about this period (which comprises about two weeks immediately preceding his death), particularly when we reflect that Thomas Paine was author of the *Age of Reason*. He would call out during his paroxysms of distress, without intermission, 'O Lord help me, God help me, Jesus Christ help me, O Lord help me,' &c., repeating the same expression without any the least variation, in a tone of voice that would alarm the house. It was this conduct which induced me to think that he had abandoned his former opinions; and I was more inclined to that belief when I understood from his nurse (who is a very serious, and, I believe, pious woman) that he would occasionally enquire, when he saw her engaged with a book, what she was reading, and being answered, and at the same time asked whether she should read aloud,* he assented, and would appear to give particular attention.

'I took occasion, during the night of the 5th and 6th of June, to test the strength of his opinions respecting revelation. I purposely made him a very late visit; it was a time which seemed to sort exactly with my errand: it was midnight; he was in great distress, constantly exclaiming in the words above mentioned; when, after a considerable preface, I addressed him in the following manner, the nurse being present:—

'Mr. Paine, your opinions, by a large portion of the community, have been treated with deference: you have never been in the habit of mixing in your conversation words of course: you have never indulged in the practice of profane swearing: you must be sensible that we are acquainted with your religious opinions as they are given to the world. What must we think of your present conduct? Why do you call upon Jesus

* The book she usually read was Mr. Hobart's *Companion for the Altar*.

Christ to help you? Do you believe that he can help you? Do you believe in the divinity of Jesus Christ? Come now answer me honestly; I want an answer as from the lips of a dying man, for I verily believe that you will not live twenty-four hours.' I waited some time at the end of every question; he did not answer, but ceased to exclaim in the above manner. Again I addressed him:—'Mr. Paine, you have not answered my questions; will you answer them? Allow me to ask again—Do you believe? or let me qualify the question—do you wish to believe that Jesus Christ is the Son of God?' After a pause of some minutes, he answered, 'I have no wish to believe on that subject.' I then left him, and know not whether he afterwards spoke to any person, on any subject, though he lived, as I before observed, till the morning of the 8th.

'Such conduct, under usual circumstances, I conceive absolutely unaccountable, though with diffidence I would remark, not so much so in the present instance; for, though the first necessary and general result of conviction be a sincere wish to atone for evil committed, yet it may be a question worthy of able consideration whether excessive pride of opinion, consummate vanity, and inordinate self-love, might not prevent or retard that otherwise natural consequence?'

On the 8th of June, 1809, about nine in the morning, died this memorable reprobate, aged seventy-two years and five months.

'For the sake of England and humanity,' says an able anonymous writer, 'it is to be wished that his impostures and his memory may rot together. In speaking of such a man it is impossible to suppress indignation. Decency towards

the dead may draw the curtain of oblivion over transient obliquities of conduct, but duty to the living demands the records of villany to be honestly severe. The examples of the dead either for warning or imitation are the property of the living; and the veritable description of virtue and vice is among the genuine 'Rights of Man.' We shall now leave him to his reckoning with those whom his false and presumptuous theories may have conducted to practical misery; and whom his Rights of Man, and Age of Reason, may have rendered proudly insensible to the concerns of the soul.

PAI'NIM, *n. s. & adj.* Fr. *payen*. Pagan; infidel.

Champions bold,
Defyed the best of Painim chivalry
To mortal combat, or carriere with lance.

Milton.

The cross hath been an ancient bearing, even before the birth of our Saviour, among the Painims themselves.

Peacock.

Whole brigades one champion's arms o'erthrow,
Slay Painims vile that force the fair.

Tickle.

The Solymean sultan he o'erthrew,
His moony troops returning bravely smeared
With Painim blood effused.

Philips.

PAINSWICK, a town of Gloucestershire, with a considerable woollen manufacture of white cloths. It abounds with a kind of stone for pavement, remarkable for its beauty. As the town is seated on a high ground, it has a most extensive prospect every way, of great part of the counties of Salop, Hereford, and Monmouth; of the windings of the Severn, and of Malvern Hills, &c. It is seven miles south-east of Gloucester, and 101 west by north of London.

P A I N T I N G.

PAINT, *v. a., v. n., & n. s.* } Fr. *peindre*;
PAINTER, *n. s.* } Span. *peñtar*,
PAINTING, } from Lat. *pingo*.
PAINTURE. } To delineate; re-
present by lines or colors: painture is from the Fr. *peinteur*, and (rarely) used as synonymous with painting.

Jezebel painted her face and tired her head.

2 Kings ix. 30.

Such is his will that paint
The earth with colours fresh,
The darkest skies with store of starry lights.

Spenser.

Hath not old custom made this life more sweet
Than that of painted pomp? are not these woods
More free from peril than the court? *Shakespeare.*

This is the very painting of your fear;
This is the air-drawn dagger which you said
Led you to Duncan. *Id. Macbeth.*

Painting is welcome;
The painting is almost the natural man:
For since dishonour trafficks with man's nature,
He is but outside: penciled figures are
Even such as they give out. *Id. Timon.*

If any such be here
That love this painting, wherein you see me smeared,
Let him express his disposition. *Shakespeare.*

Live to be the shew and gaze o' the time:
We'll have thee, as our rarer monsters are,
Painted upon a pole. *Id. Macbeth.*

Who fears a sentence or an old man's saw,
Shall by a painted cloth be kept in awe. *Shakespeare.*

The lady is disloyal.

—Disloyal!

—The word is too good to paint out her wickedness.

Id.

In the placing let some care be taken how the
painter did stand in the working. *Wotton.*

The air
Floats as they pass, fanned with unnumbered
plumes:

From branch to branch the smaller birds with song
Solaced the woods, and spread their painted wings,
'Till even. *Milton's Paradise Lost.*

To the next realm she stretched her swaty,
For painture near adjoining lay,
A plenteous province. *Dryden.*

Painting and poesy are two sisters so like, that
they lend to each other their name and office; one
is called a dumb poesy, and the other a speaking
picture. *Id. Dufresnoy.*

Beauty is only that which makes all things as they
are in their proper and perfect nature; which the
best painters always chuse by contemplating the
forms of each. *Dryden.*

Till we from an author's words *paint* his very thoughts in our minds, we do not understand him.

Locke.

The church of the annunciation looks beautiful in the inside, all but one corner of it being covered with statues, gilding, and *paint*.

Addison.

Poets are limners

To copy out ideas in the mind :

Words are the *paint* by which their thoughts are shown,

And nature is their object to be drawn. *Granville.*

'Tis in life as 'tis in *painting*,

Much may be right, yet much be wanting.

Prior.

Oh ! if to dance all night, and dress all day,
Charmed the small-pox, or chased old age away,

To patch, nay ogle, might become a saint,
Nor would it sure be such a sin to *paint*.

Pope.

Her charms in breathing *paint* engage,

Her modest cheek shall warm a future age. *Id.*

Arts on the mind, like *paint* upon the face,
Fright him, that's worth your love, from your embrace.

Young.

The showery arch

With listed colours gay, or, azure, gules,
Delights and puzzles the beholder's eye,
That views the watery brede with thousand shews
Of *paintures* varied.

Philips.

SIR BENJ. NAY now, Lady Sneerwell, you are severe upon the widow. Come, come, 'tis not that she *paints* so ill—but when she has finished her face, she joins it so badly to her neck, that she looks like a mended statue, in which the connoisseur sees at once that the head's modern, though the trunk's antique.

Sheridan.

PAINTING is the art of representing to the eyes, by means of figures and colors, every object in nature that is discernible by the sight ; and of sometimes expressing, according to the principles of physiognomy, and by the attitudes of the body, the various emotions of the mind. A smooth surface, by means of lines and colors, represents objects in a state of projection ; and may represent them in the most pleasant dress, and in a manner most capable of enchanting the senses. The art of painting is extremely difficult in the execution ; and its merit can only be appreciated by devotees to the art.

The painter who is distinguished for noble and profound conceptions ; who by means of a perfect delineation, and colors more capable of fixing the attention and dazzling the eye, conveys to the spectators the sentiments with which he himself was inspired ; who animates them with his genius, and makes a lasting impression on their mind ; this artist resembles a poet, and is worthy to share even in the glories of Homer.

PART I.

HISTORY OF THE ART.

SECT. I.—OF THE RISE AND PROGRESS OF PAINTING IN ANCIENT TIMES.

Painting originally consisted of simple outlines, and long continued in this state before the expression of relieve, or the application of color.

The next step in the art was to render the imitation more complete by applying colors ; which was done in the same way that we color maps ; and several nations, as the Egyptians, the Chinese, and the different nations of India, have never yet painted in a better manner.

Even that great improvement in painting, the Claro-Obscuro, was discovered by the Greeks before the invention and proper application of colors.

Plato, who lived 400 years before the Christian era, states, that painting had been practised in Egypt for 10,000 years. Without regarding his Egyptian chronology as accurate, we may consider it as designed to impress us with the very remote antiquity of the art.

The monuments of Egyptian painting with which we are best acquainted, says Winckelman, are the chests of mummies. These have resisted the injuries of time, and are still submitted to the examination of the curious. The white, made of white lead, is spread over the ground of the piece ; the outlines of the figure are traced with black strokes, and the colors are generally blue, red, yellow, and green, laid on without any mixture or shading. The red and blue prevail most ; and these colors seem to have been prepared in the coarsest manner. The light is formed by leaving those parts of the ground where it is necessary covered with the white lead, as it is formed by the white paper in some of our drawings. This description is sufficient to convince us that the whole art of painting in Egypt consisted in coloring ; but every person knows that without tints, and the mixture of colors, painting can never arrive at perfection. Pliny says, that the Egyptian artists painted the precious metals ; that is, they varnished or enamelled them. It is doubtful what this art was, but most probably it consisted in covering gold or silver with a single color. The Egyptians are supposed to have continued this coarse style till the reign of the Ptolemies.

The ancient Persians were so far from excelling in the arts, that the paintings of Egypt were highly esteemed among them after they had conquered that country. The only ancient painter of Persia, whose name is preserved, is Manes ; and he is more celebrated for his attempt to accommodate the Persian theology of two first principles to the Christian system, than for his skill as a painter. He was famed, however, for drawing straight lines without a ruler. The modern Persians have made no progress in the art.

In India the art seems to be confined to monstrous figures connected with their religion. See POLYTHEISM. And the paintings of Thibet are only remarkable for the fineness of their strokes.

The Chinese seem never to have had the least idea of perspective. Their landscapes have no plan, no variety in the appearance of the clouds, and no diminishing of the objects in proportion to their distance ; and their representations of human beings are caricatures upon the human figure.

It is undoubtedly to the Greeks that we are indebted for the highest cultivation which the imitative arts have known. In sculpture this is even now sufficiently palpable, since at this day their performances remain not only unequalled but unapproached. The same observation holds with respect to architecture ; and it is probable that, so far as relates to the perfect representation of a single figure, it might be applied also to

their painting; but there is great reason to conclude that in many branches of this art they are surpassed by the great names among the moderns. In Egypt the knowledge of that principle which is most desirable in art (selection) never appears to have operated far. When a specific form of character was once adopted, there it remained, and was repeated unchanged for generations. Little action was given to figures, and no attempts at all made at expression. Pliny reports, that the statues executed by the Egyptians in his time differed in no respect whatever from those made by them 1000 years before. Of their paintings a few remain to the present era, but the date of these relics is by no means evident. Two of them (seen at Thebes and described by Bruce) are referred by him to the time of Sesostris (about 700 years B. C.), who is said to have restored and embellished that city; but this is mere conjecture. He remarks of these paintings, that they might be compared with good sign-paintings of his day.

We cannot here detail the reasons and the coincidence of fortunate circumstances which raised the Greeks to be the arbiters of form. 'The standard they erected,' says Fuseli, 'the canon they framed, fell not from heaven: but as they fancied themselves of divine origin, and religion was the first mover of their art, it followed that they should endeavour to invest their authors with the most perfect form; and, as man possesses that exclusively, they were led to a complete and intellectual study of his elements and constitution; this, with their climate, which allowed that form to grow, and to show itself to the greatest advantage; with their civil and political institutions, which established and encouraged exercises and manners best calculated to develop its powers; and above all, that simplicity of their end, that uniformity of pursuit, which in all its derivations retraced the great principle from which it sprang, and, like a central stamen, drew it out into one immense connected web of congenial imitation; these, I say, are the reasons why the Greeks carried the art to a height which no subsequent time or race has been able to rival or even to approach. Great as these advantages were, it is not to be supposed that nature deviated from her gradual progress in the development of human faculties, in favor of the Greeks. Greek art had her infancy, but the graces rocked her cradle, and love taught her to speak. If ever legend deserved our belief, the amorous tale of the Corinthian maid, who traced the shade of her departing lover by the secret lamp, appeals to our sympathy to grant it; and leads us at the same time to some observations on the first mechanical essays of painting, and that linear method which, though passed nearly unnoticed by Winckelman, seems to have continued as the basis of execution, even when the instrument for which it was chiefly adapted had long been laid aside.

'The etymology of the word used by the Greeks to express painting being the same with that which they employ for writing, makes the similarity of tool, materials, method, almost

certain. The tool was a style or pen of wood or metal; the materials a board, or a levigated plane of wood, metal, stone, or some prepared compound; the method, letters or lines.

'The first essays of the art were skiagrams, simple outlines of a shade, similar to those which have been introduced to vulgar use by the students, and parasites of physiognomy, under the name of *Silhouettes*; without any other addition of character or feature but what the profile of the object, thus delineated, could afford.

'The next step was the monogram, outlines of figures without light or shade, but with some addition of the parts within the outline, and from that to the monochrom, or paintings of a single color on a plane or tablet, primed with white, and then covered with what they called punic wax, first amalgamated with a tough resinous pigment, generally of a red, sometimes dark brown, or black color. In, or rather through, this thin inky ground, the outlines were traced with a firm but pliant style, which they called *cestrum*; if the traced line happened to be incorrect or wrong, it was gently effaced with the finger or with a sponge, and easily replaced by a fresh one. When the whole design was settled, and no farther alteration intended, it was suffered to dry, was covered, to make it permanent, with a brown encaustic varnish, the lights were worked over again, and rendered more brilliant with a point still more delicate, according to the gradual advance from mere outlines to some indications, and at last to masses of light and shade, and from those to the superinduction of different colors, or the invention of the polychrom, which, by the addition of the pencil to the style, raised the mezzotinto or stained drawing to a legitimate picture, and at length produced that vaunted harmony, the magic scale of Grecian color.

'If this conjecture, for it is not more, on the process of linear painting, formed on the evidence and comparison of passages always unconnected, and frequently contradictory, be founded in fact, the rapturous astonishment at the supposed momentaneous production of the Herculean dancers, and the figures on the earthen vases of the ancients, will cease; or rather, we shall no longer suffer ourselves to be deluded by palpable impossibility of execution: on a ground of levigated lime, or on potter's ware, no velocity or certainty attainable by human hands can conduct a full pencil with that degree of evenness equal from beginning to end with which we see those figures executed, or, if it could, would ever be able to fix the line on the glassy surface without its flowing: to make the appearances we see possible, we must have recourse to the linear process that has been described, and transfer our admiration to the perseverance, the correctness of principle, the elegance of taste that conducted the artist's hand, without presuming to arm it with contradictory powers: the figures he drew, and we admire, are not the magic produce of a winged pencil, they are the result of gradual improvement, exquisitely finished monochroms.

'How long the pencil continued only to

assist, when it began to engross, and when it at last entirely supplanted the cestrum, cannot, in the perplexity of accidental report, be ascertained. Apollodorus, in the ninety-third olympiad, and Zeuxis in the ninety-fourth, are said to have used it with freedom and with power. The battle of the Lapithæ and the Centaurs, which, according to Pausanias, Parrhasius painted on the shield of the Minerva of Phidias, to be chased by Mys, could be nothing but a monochrome, and was probably designed with the cestrum, as an instrument of greater accuracy. Apelles and Protogenes, nearly a century afterwards, drew their contested lines with the pencil; and that alone, as delicacy and evanescent subtlety were the characteristics of those lines, may give an idea of their mechanic excellence. And yet in their time the diagraphic process, which is the very same with the linear one we have described, made a part of liberal education. And Pausias of Sicyon, the contemporary of Apelles, and perhaps the greatest master of composition amongst the ancients, when employed to repair the decayed pictures of Polygnotus at Thespiz, was adjudged by general opinion to have egregiously failed in the attempt, because he had substituted the pencil for the cestrum, and entered a contest for superiority with weapons not his own.

‘Here it might seem in its place to say something on the encaustic method used by the ancients; were it not a subject by ambiguity of expression and conjectural dispute so involved in obscurity that a true account of its process must be despaired of: the most probable idea we can form of it is, that it bore some resemblance to our oil-painting, and that the name was adopted to denote the use of materials, inflammable or prepared by fire, the supposed durability of which, whether applied hot or cold, authorised the terms *εγκαυτος* and *inussit*.’ See our article ENCAUSTIC PAINTING.

The ancient inhabitants of Etruria were among the first who connected the arts with the study of nature. In some of their monuments, which still remain, there is to be observed a first style, which shows the art in its infancy; and a second which, like the works of the Florentine artists, shows more of greatness and exaggeration in the character than precision or beauty. Pliny says that painting was carried to great perfection in Italy before the foundation of Rome; but it appears that even in his time the painters of Etruria were held in great reputation. The only Etrurian paintings which remain have been found in the tombs of the Tarquins. They consist of long painted friezes, and pilasters adorned with huge figures, which occupied the whole space from the base to the cornice. These paintings are executed on a ground of thick mortar, and many of them are in a state of high preservation.

Winckelman is of opinion that the Greek colonies established at Naples and Nola had at a very early period cultivated the imitative arts, and taught them to the Campanians established in that country. He considers as works purely Campanian certain medals of Capua and Teanum, cities of Campania into which the Greek colo-

nies never penetrated. But there have been discovered, adds he, a great number of Campanian vases covered with painting. The design of the greatest part of these vases, says he, is such, that the figures might occupy a distinguished place in the works of Raphael. Those vases, when we consider that this kind of work admits of no correction, and that the stroke which forms the outline must remain as it is originally traced, are wonderful proofs of the perfection of the art among the ancients. But the count de Caylus is persuaded that the Campanian vases are of Greek origin.

The name of Phidias is as familiar to every man of education as his own. That of Panæus, his brother, is known only to the few who trace back to their starting-post the early and obscure footsteps of the muse of painting. The performances of Phidias, particularly those in the temple of Minerva, called the Parthenon, remain even to the present day a source of admiration, of wonder, and envy. Those of Panæus exhibited his art still in its infancy, and have been for many revolving ages buried in the stream of oblivion.—To this man, however, Greece appears to have been indebted for an anxious zeal, at least, to advance the art he practised to a more equal station with sculpture; and in his time there were prizes established both at Delphos and Corinth, for its encouragement, whereto he himself contended, but was excelled by Timogras of Chalcis.

The first great name of that epoch of the preparatory period, when facts appear to overbalance conjecture, is that of Polygnotus of Thasos, who painted the *Pœcile* at Athens, and the *Lesche*, or public hall, at Delphi. Of these works, but chiefly of the two large pictures at Delphi, which represented scenes subsequent to the eversion of Troy, and Ulysses consulting the spirit of Tiresias in Hades, Pausanias gives a minute and circumstantial detail; by which we are led to surmise that what is now called composition was totally wanting in them as a whole; for he begins his description at one end of the picture, and finishes it at the opposite extremity—a senseless method, if we suppose that a central group, or a principal figure to which the rest were in a certain degree subordinate, attracted the eye; it appears as plain that they had no perspective, the series of figures on the second or middle ground being described as placed above those in the foreground, and the figures in the distance above the whole: the honest method, too, which the painter chose of annexing to many of his figures their names in writing, savors much of the infancy of painting. This circumstance, however, we should be cautious in imputing either to ignorance or imbecility, since it might rest on the firm base of permanent principles. The genius of Polygnotus was, more than that of any other artist before or after, a public genius, his works monumental works, and these very pictures the votive offerings of the Gnidians. Polygnotus was, in fact, a man endowed with uncommon ability, and certainly advanced his art very far in point of expression and action in his figures, and in ideal coloring. Of the truth of this observation, his figure of the demon Euryonimus, in one of the

pictures abovementioned, namely, Ulysses consulting the shade of Tiresias in Hades, affords sufficient proof. 'His color,' says Pausanias, 'is between black and azure, like that of the flies which infest meat; he shows his teeth, and sits upon the skin of the vulture.' Lucian and Pliny both speak in high commendation of this artist; the former, in particular, invoking his aid to finish his perfect woman, exclaims:—'Polygnotus shall open and spread her eyebrows, and give her that fine, glowing, decent blush, which beautifies so irresistibly his Cassandra. He also shall give her a flowing, unconstrained attire, which, with all its delicate wavings, shall partly adhere to her body and partly flutter in the wind.'

Polygnotus, says Aristotle, improves the model. His invention reached the conception of undescribed being in the demon Eurynomus; filled the chasm of description in Theseus and Pirithous, in Ariadne and Phœdra; and improved its terrors in the spectre of Tityus; whilst color to assist it became in his hand an organ of expression; such was the prophetic glow which still crimsoned the cheeks of his Cassandra in the time of Lucian. The improvements in painting which Pliny ascribes to him, of having dressed the heads of his females in variegated veils and bandeaus, and robed them in lucid drapery; of having gently opened the lips, given a glimpse of the teeth, and lessened the former monotony of face; such improvements were surely the most trifling part of a power to which the age of Apelles and that of Quintilian paid equal homage: nor can it add much to our esteem for him, to be told by Pliny that there existed, in the portico of Pompey, a picture of his with the figure of a warrior in an attitude so ambiguous as to make it a question whether he were ascending or descending. Such a figure could only be the offspring of mental or technic imbecility, even if it resembled the celebrated one of a Diomedes carrying off the palladium with one, and holding a sword in the other hand, on the intaglio inscribed with the name of Dioscorides.

With this simplicity of manner and materials the art seems to have proceeded from Polygnotus, Aglaophon, Phidias, Panæus, Colotes, and Evenor, the father of Parrhasius, during a period of more or less disputed olympiads, till the appearance of Apollodorus the Athenian, who applied the essential principles of Polygnotus to the delineation of the species, by investigating the leading forms that discriminate the various classes of human qualities and passions. The acuteness of his taste led him to discover that as all men were connected by one general form, so they were separated each by some predominant power, which fixed character, and bound them to a class: that, in proportion as this specific power partook of individual peculiarities, the farther it was removed from a share in that harmonious system which constitutes nature, and consists in a due balance of all its parts: thence he drew his line of imitation, and personified the central form of the class to which his object belonged; and to which the rest of its qualities administered without being absorbed: agility was not suffered

to destroy firmness, solidity, or weight; nor strength and weight agility; elegance did not degenerate to effeminacy, or grandeur swell to hugeness; such were his principles of style: his expression extended them to the mind, if we may judge from the two subjects mentioned by Pliny, in which he seems to have personified the characters of devotion and impiety; that in the adoring figure of a priest, perhaps of Chryses, expanding his gratitude at the shrine of the god whose arrows avenged his wrongs and restored his daughter; and this, in the figure of Ajax wrecked, and from the sea-swept rock hurling defiance unto the murky sky. As neither of these subjects can present themselves to a painter's mind without a contrast of the most awful and the most terrific tones of color, magic of light and shade, and unlimited command over the tools of art, we may with Pliny and with Plutarch consider Apollodorus as the first assertor of the pencil's honors, as the first colorist of his age, and the man who opened the gates of art which the Heracleot Zeuxis entered. From the essential style of Polygnotus, and the specific discrimination of Apollodorus, Zeuxis, by comparison of what belonged to the genius and what to the class, framed at last that ideal form, which, in his opinion, constituted the supreme degree of human beauty, or, in other words, embodied possibility, by uniting the various but homogeneous powers scattered among many, in one object, to one end. Such a system, if it originated in genius, was the considerate result of taste refined by the unremitting perseverance with which he observed, consulted, compared, and selected, the congenial but scattered forms of nature.

Quintilian remarks of Zeuxis that he considered the poetic unity of character adopted by Homer, in the descriptions of his heroes, as his model; giving to each individual he painted the peculiar distinction of a class. It is said, and the anecdote bears on the remark, that, previously to commencing a picture of Juno for her temple at Agrigentum, he requested to see all the most beautiful maidens of the city naked, and from them selected five whose shape he most admired; purposing to exhibit the most perfect combination of female forms, by selecting and adopting the most beautiful parts of each. Of the coloring employed by Zeuxis, little is known with certainty; but it may doubtless be inferred with some fairness that it rivalled the excellencies of his design; and, from his alleged method of painting monochroms on a black ground, adding the lights in white, we may deduce that he understood the extension of light and shade to masses.

Timanthes, Eupompus, Androcides, and Parrhasius the Ephesian, all flourished during the same era with Zeuxis. The latter, however, is the only one who may be said to have rivalled that eminent artist; and indeed it is hard to tell which of the two bore the palm, or most sufficiently claimed it. The story related by Pliny of their contest is not decisive on the former point, since those pictures had little to do with the real excellencies of either artist, except in the one quality of coloring. Zeuxis painted grapes; and, on exhibiting his picture,

the birds came with the greatest avidity to pluck them. The rival artist then proceeded to display his performance, and, on being introduced to the spot, Zeuxis exclaimed, 'Remove your curtain that we may see the painting.' The curtain was the painting, and Zeuxis confessed himself vanquished, exclaiming, 'Zeuxis has deceived birds, but Parrhasius has deceived Zeuxis himself.' Now, how does this fact, if it be regarded as one, tally with the limitation of Pliny as to the colors used by the ancient artists? A curtain may, it is true, be of a dull color, and such a one might possibly have been imitated by Parrhasius with such materials, and so perfectly, as to have deceived Zeuxis: but it is to be presumed that the luscious transparency, color, and brilliancy of the grape, in those days, were not very widely different from what it now exhibits; and those pure qualities can only be represented by the purest and most perfect of colors. Parrhasius is reported to have had a surer eye than this celebrated rival for proportion and symmetry: he circumscribed the ample style of Zeuxis, and, by subtle examination of outline, established that standard of divine and heroic form which raised him to the authority of a legislator from whose decisions there was no appeal. He gave to the divine and heroic character, in painting, what Polyclethus had given to the human in sculpture, by his Doryphorus, a canon of proportion. Phidias had discovered in the nod of the Homeric Jupiter the characteristic of majesty, inclination of the head: this hinted to him a higher elevation of the neck behind, a bolder protrusion of the front, and the increased perpendicular of the profile. To this conception Parrhasius fixed a maximum; that point from which descends the ultimate line of celestial beauty, the angle within which moves what is inferior, beyond which what is portentous. From the head conclude to the proportions of the neck, the limbs, the extremities; from the father to the race of gods; all the sons of one, Jupiter; derived from one source of tradition, Homer; formed by one artist, Phidias: on him measured and decided by Parrhasius. In the simplicity of this principle, adhered to by the succeeding periods, lies the uninterrupted progress, and the unattainable superiority, of Grecian art. With this prerogative, which evidently implies a profound as well as general knowledge of the parts, how are we to reconcile the criticism passed on the intermediate parts of his forms as inferior to their outline? or how could Winckelman, in contradiction with his own principles, explain it, by a want of anatomic knowledge? how is it possible to suppose that he who decided his outline with such intelligence that it appeared ambient, and pronounced the parts that escaped the eye, should have been uninformed of its contents? Let us rather suppose that the defect ascribed to the intermediate forms of his bodies, if such a fault there was, consisted in an affectation of smoothness bordering on insipidity, in something effeminately voluptuous, which absorbed their character and the idea of elastic vigor; and this Euphranor seems to have hinted at, when, in comparing his own Theseus with that of Parrhasius, he pronounced the Ionian's to have fed

on roses, his own on flesh: emascuate softness was not in his opinion the proper companion of the contour, or flowery freshness of color an adequate substitute for the sterner tints of heroic form.

None of the ancients seem to have united or wished to combine, as man and artist, more qualities seemingly incompatible than Parrhasius:—the volubility and ostentatious insolence of an Asiatic with Athenian simplicity and urbanity of manners; punctilious correctness with blandishments of handling and luxurious color; and with sublime and pathetic conception a fancy libidinally sportive. If he was not the inventor, he surely was the greatest master of allegory, supposing that he really embodied, by signs universally comprehended, that image of the Athenian ΔΗΜΟΕ or people, which was to combine and to express at once its contradictory qualities. Perhaps he traced the jarring branches to their source, the aboriginal moral principle of the Athenian character, which he made intuitive. This supposition alone can shed a dawn of possibility on what else appears impossible. We know that the personification of the Athenian Δημος was an object of sculpture, and that its images by Lyson and Leochares were publicly set up; but there is no clue to decide whether they preceded or followed the conceit of Parrhasius. It was repeated by Aristolaus, the son of Pausias. The decided forms of Parrhasius, Timanthes the Cythnian, his competitor for fame, attempted to inspire with mind and to animate with passions. No picture of antiquity is more celebrated than his immolation of Iphigenia in Aulis, painted, as Quintilian informs us, in contest with Colotes of Teos, a painter and sculptor from the school of Phidias; crowned with victory at its rival exhibition, and since the theme of unlimited praise from the orators and historians of antiquity, though the solidity or justice of their praise relatively to the art has been questioned by modern criticism.

The art now continued to advance with rapid strides. Nature was the guide; and to develope her various charms, in expression, shape, and color, the object of the artists. The leading principle of Eupompus may be traced in the advice which he gave to Lysippus, as preserved by Pliny, whom, when consulted on a standard of imitation, he directed to the contemplation of human variety in the multitude of characters who were passing by. 'Behold,' said the painter, 'behold my models! From nature, not from art, by whomsoever wrought, must he study who seeks to acquire reputation and extend the scope of his art.' The doctrine of Eupompus was adopted by Pamphilus the Amphipolitan, the most scientific artist of his time, and by him transmitted to Apelles of Cos, or, according to Lucian, of Ephesus, his pupil. This wonderful person was, if we may credit the tradition respecting him, gifted with such a combination of natural and acquired endowments as never, perhaps, either before or since, fell to the lot of another individual. In addition, he had the happiness to live at that period wherein the genius of his country had reached its highest point of elevation. The name of Apelles in

Pliny is the synonyme of unrivalled and unattainable excellence; but, in our estimate of his talents, we must candidly consider what modifications may be requisite on an enumeration of his actual works. It is very difficult to ascertain how far real value may be attached to the panegyrics on works of art. These will always be bestowed, in the highest strain, on the best works of the writer's time: and thus we observe that, at all periods, contemporary authors have expressed the same degrees of approbation, and in the same terms, of the pictures they have seen produced; whilst we know that, as art was slow in its progress, it is impossible that in every stage it could have merited equal commendation. The works of Apelles, so far as it is possible to comprehend their nature, exhibit neither the deepest pathos of expression, the widest sphere of comprehension, nor the most acute discrimination of character: his great prerogative consisted, perhaps, more in the unison than in the extent of his powers: he knew better what his capabilities could achieve, and what lay beyond them, than any other artist. Grace of conception, and refinement of taste, were his elements, and went hand in hand with grace of execution, and completeness in finish, irresistible when found united. The Venus of Apelles, or, as it may rather be called, the personification of the birthday of Love, was esteemed as the most splendid achievement of art; the outline of the goddess baffled every attempt at improvement, whilst imitation shrunk from the purity, the force, the brilliancy, the evanescent gradations of her tints. The pictures produced by this consummate artist appear to have been numerous, and the reader will find, in Pliny, lib. xxxv. cap. 10, a pretty extensive list. A brief enumeration of some of them will serve to convey a just idea of the class of subjects generally chosen by him.

The portraits painted by him both of Alexander the Great and his father Philip were numerous; some of them single, some accompanied by other figures. Alexander launching thunder, in the temple of Diana at Ephesus, has been greatly extolled for its effect and the boldness of its relief, 'the hand which was raised appearing to come forward, and the lightning to be out of the picture.' In another portrait of the same prince he was represented in a triumphal chariot, and near him the figure of war, with his hands tied behind his back.

This, and another Alexander, accompanied by Castor and Pollux, and a figure of Victory, were presented by Augustus to the forum.

Many other portraits are alluded to: namely, Antiochus, king of Syria; Antigonus; Archelaus, with his wife and daughter; Abron, an effeminate debauchee; Clatus, on horseback armed (except his head), with an attendant delivering his helmet to him; and Megabysus, a priest of the temple of Diana at Ephesus, sacrificing, in his pontifical vestments. In fanciful subjects we find:—Diana attending a sacrifice, surrounded by her nymphs; Neoptolemus, son of Achilles, on horseback, contending with Persians; Hercules, with his back towards the observer, and his head turned round so as to show his face; and lastly his renowned picture of Venus

rising from the sea, already mentioned, which, being taken to Rome, was dedicated by Augustus in the temple of Julius Cæsar; and upon which several Greek epigrams are to be found in the Anthologia.

The refinements of the art were by Aristides of Thebes applied to the mind. The passions which history had organised for Timanthes, Aristides caught as they rose from the breast or escaped from the lips of nature herself; his volume was man, his scene society: he drew the subtle discriminations of mind in every stage of life, the whispers, the simple cry of passion, and its most complex accents. Such, as history informs us, was the suppliant whose voice you seemed to hear, such his sick man's half extinguished eye and laboring breast, such the sister dying for her brother, and, above all, the half-slain mother shuddering lest the eager babe should suck the blood from her palsied nipple. This picture was probably at Thebes, when Alexander sacked that town; what his feelings were when he saw it we may guess from his sending it to Pella. Its expression, poised between the anguish of maternal affection and the pangs of death, gives to commiseration an image which neither the infant piteously caressing his slain mother in the group of Epigonus, nor the absorbed feature of the Niobe, nor the struggle of the Laocoon, excite. Timanthes had marked the limits that discriminate terror from the excess of horror; Aristides drew the line that separates it from disgust. His subject is one of those that touch the ambiguous line of a squeamish sense.—Taste and smell, as sources of tragic emotion, and, in consequence of their power, commanding gesture, seem scarcely admissible in art or on the theatre, because their extremes are more nearly allied to disgust, and loathsome or risible ideas, than to terror. The prophetic rance of Cassandra, who accents the prepared murder of Agamemnon at the threshold of the ominous hall; the desperate moan of Macbeth's queen on seeing the visionary spot still uneffaced infect her hand—are images snatched from the lap of terror—but soon would cease to be so were the artist or the actress to enforce the dreadful hint with indiscreet expression or gesture. This, completely understood by Aristides, was as completely missed by his imitators, Raffaele in the Morbetto, and Poussin in his Plague of the Philistines. In the group of Aristides our sympathy is immediately interested by the mother, still alive though mortally wounded, helpless, beautiful, and forgetting herself in the anguish for her child, whose situation still suffers hope to mingle with our fears: he is only approaching the nipple of the mother. In the group of Raffaele the mother dead of the plague, herself an object of apathy, becomes one of disgust, by the action of the man, who bending over her, at his utmost reach of arm, with one hand removes the child from the breast, whilst the other, applied to his nostrils, bars the effluvia of death. Our feelings alienated from the mother, come too late even for the child, who by his languor already betrays the mortal symptoms of the poison he imbibed at the parent corpse. It is curious to observe the permutation of ideas which takes

place, as imitation is removed from the sources of nature: Poussin, not content with adopting the group of Raffaele, once more repeats the loathsome attitude in the same scene; he forgot, in his eagerness to render the idea of contagion still more intuitive, that he was averting our feelings with ideas of disgust.

At the same era flourished Protogenes of Rhodes, towards whom the generous conduct of Apelles deserves particular attention. Protogenes had painted a picture of Jalytus, which so delighted Apelles that he sailed to Rhodes on purpose to visit his accomplished contemporary. There, finding him in poverty and obscurity, he is reported to have bought several of the performances of Protogenes with the avowed intention of selling them as his own, and thus succeeded in exciting the notice of the people of Rhodes towards the abilities of their fellow citizen, who thence rose from his hitherto humble situation to fame and fortune. The well known friendly contest of Apelles and Protogenes respecting the lines has been described elsewhere, and stands as a fact on undeniable testimony. The tablet whereon they were drawn, having been taken to Rome, was there seen by Pliny himself, who speaks of it as having the appearance of a large blank surface, the extreme delicacy of the lines rendering them invisible except on close inspection. They were drawn with different colors—one upon, or rather within the other. Judging from Pliny's account it might be imagined that all the beauty lay in the extreme delicacy of the points which had been used, and of the hands which had applied them; but it is reasonable to suppose that the first direction of the line might have some principle of beauty for its guide, by which, as well as by the neatness of its execution, Protogenes was immediately moved to the declaration, that none but Apelles could have drawn it.

In comparing the performances of modern painters with the character of those the names and description of which ancient authors have handed down to us, it will appear pretty clearly that the Greek artists surpassed the moderns in sentiment, in invention or imagination, in expression, in position of figures, in proportion, and contour. With regard to color, although they are remarkable for vividness, the case is by no means so evident. Pliny allows them the use of but four, and yet at other times makes allusions which palpably imply their means of that kind to be far more extensive. The use of oils has however given to moderns a decided advantage in this particular.

In A. R. 259, and A. A. C. 494, Appius Claudius consecrated a number of shields in the temple of Bellona, which contained in basso relievo the portraits of his family. This example was followed; and in process of time it was common among the Romans to place those images in private houses. The execution in basso relievo is a proof that they had an idea of painting, at least with one color. As long as the Romans employed artists of other nations, they had little desire to cultivate the arts; but about the year of Rome 450, and 303 years before Christ, one of the Fabii employed himself in

painting. He painted the temple of Safety; and his works remained till that temple was burnt, in the reign of Claudius. The example of Fabius, surnamed Pictor from his profession, did not excite his fellow citizens to imitation. A century and a half elapsed before the tragic poet Pacuvius, nephew of Ennius, painted the temple of Hercules in the forum boarium. The glory which he had acquired by his dramatic works shed some lustre on the art which he exercised; but did not confer on it that respect which could recommend it to general practice. The paintings of Fabius were the recreations of his youth; those of Pacuvius the amusements of his old age; but painting is a difficult art, which requires a man's whole time and attention to be solely devoted to it.

There were in fact no eminent painters at Rome till the time of the emperors; but, as the national spirit was changed, the profession of the fine arts acquired more respectability. The Romans, during the time of the republic, were animated with the spirit of liberty and the desire for conquest. When these two passions were weakened, the love of the arts obtained among them. As a proof of this, Nero himself gloried in being an artist. A Colossian picture of 120 feet was painted at Rome by his command, which was afterwards destroyed by lightning. The name of the painter is not recorded, but this is the only painting on cloth mentioned by ancient authors.

The paintings of the ancient artists were either moveable, or on the ceilings or compartments of buildings. According to Pliny, the most eminent were those who painted moveable pictures. The latter were either on fir wood, larch, boxwood, or canvas, sometimes on marble. When they employed wood, they laid on first a white ground. Among the antiquities of the Herculaneum are four paintings on white marble. Their immoveable paintings on walls were either in fresco, or on dry stucco in distemper. Indeed all the ancient paintings may be reduced to, 1st, fresco painting; 2dly, water color, or distemper painting on a dry ground; and, 3dly, encaustic painting. The ancient fresco paintings appear to have been always on a white stucco ground, the colors inlaid very deep, and the drawing much more bold and free than any similar performance of modern art. The outlines of the ancient paintings on fresco were probably done at once, as appears from the depth of the incision, and the boldness and freedom of the design, equal to the care and spirit of a pencilled outline.

In general the ancients painted on a dry ground, even in their buildings, as appears from the Herculanean antiquities, most of which are executed in this manner. At Rome and Naples the first (deepest) coat is of true Puzzolana, of the same nature with the terras now used in mortar, required to keep out wet, about one finger thick: the next of ground marble or alabaster, and sometimes of pure lime or stucco, in thickness about one-third of the former. Upon this they appear to have laid a coat of black, and then another of red paint; on which last the subject itself was executed. Such seems to have been

their method of painting on walls; but in their moveable pictures, and in the performance of their first artists, and where the effects of shade and light were necessary, they doubtless used white. The colors employed they seemed to have mixed up with size, of which they preferred that made by boiling the ears and genitals of bulls. This appears to have made the colors so durable and adhesive, that the ancient paintings lately found bear washing with a soft cloth and water; and sometimes even diluted aquafortis is employed to clean their paintings on fresco. Pliny says, that glue, dissolved in vinegar and then dried, is not again soluble.

The ancient colors, we have said, were vivid: it is obvious also that they were remarkably enduring, from the fact of the Greek paintings having existed uninjured, and become objects of admiration to the Romans several ages after they were executed. They were in the habit of employing a sort of varnish called *atramentum*, which served to secure their paintings from the influence of the atmospheric air.

Whether the art of composition, at least in the scientific way now practiced, was ever understood by them, or whether they possessed any knowledge whatever of the laws of *chiaro-scuro*, is wrapped up in doubt and mystery which it is next to impossible any opportunity will occur of unravelling. The accounts of these performances by ancient writers do not seem to have sprung from any practical acquaintance with the rules of the art, and hence they are, as will be readily imagined, very vague and unsatisfactory to the painter. According to the light which is thus afforded us we are led to conclude that the chief aim of the Greek artists was to impress on the mind of the spectator in the most energetic way the effect of one particular image; we do, it is true, occasionally encounter descriptions of pictures containing many figures, but in general the subject is confined to the introduction of two or three. Nothing is said by these writers of what we term background, and little on the contrasts of light and shade, &c. That they had some knowledge of this kind, however, is apparent from an observation of Plutarch, namely, that 'painters heighten the brilliancy of light colors by opposing them to dark ones, or to shades;' and from another of Pliny, who, speaking of painters in the monochromatic style, adds:—'In process of time the art assumed new powers, and discovered light and shadow, by gradating which the colors are alternately kept down or heightened. Afterward splendor was added, which was different from light, and which, being a medium between light and shade, was denominated *tonon*; while the union of colors, and transition from one to another, they called *harmogen*;' lib. xxxv. c. 5. Hence we find that the great requisites for the science of *chiaro-scuro*, viz. contrast, tone, and harmony, were comprehended by them; that the various degrees of light and shade, distinctly and in combination, were duly felt; and that the value of middle or half tint was perceived and attended to. Led away by these facts, M. du Bos and others have concluded that *chiaro-scuro* was scientifically comprehended and practised by

them. It will not fail, however, to strike the artist that every thing stated by Pliny to have been known by the ancient artists is resolvable into that which is requisite for the due execution of a single figure on a plain ground, and in the most simple style of execution. In the best of the paintings found at Herculaneum there is exhibited an unusually skilful management of *chiaro-scuro* in the reduction of tone on parts, both of the flesh and drapery, but it is inconclusive on the general point at issue.

With respect to their knowledge of perspective similar uncertainty appears to exist. Vitruvius, indeed, reports it to have been practised by Agatharcus (a contemporary of Æschylus and Polygnotus) in the theatre at Athens; and to have been shortly after reduced to principles, and treated as a science by Anaxagoras and Democritus. The deductions, however, are made from premises of a similarly inconclusive nature to those enumerated in our observations on *chiaro-scuro*.

Lastly, we may remark that no mention, at all events none of consequence, is made of a ground of relief on the ancient writers on painting. Landscape also appears to have been wholly disregarded. There are attempts at background made in several of the paintings of Herculaneum, but undeserving of any commendation; and the most beautiful of those productions of ancient art which have hitherto been displayed to the eyes of the moderns are of figures relieved off plain grounds, or rather amalgamated into them. In none of the criticisms or observations of ancient authors is a secondary object ever mentioned as being in the distance.

We shall not dwell on the degree of cultivation bestowed on the art of painting by the ancient Romans, but pass on to enumerate the several colors stated by Pliny to have been known to them. See lib. xxxv., caps. 6 and 7.

WHITES.—*Melinum*. A native white earth from the island of Melos, used by Apelles before white lead prepared with vinegar was invented.

Parætônium. An Egyptian white earth used in distemper, and similar, probably, to the white now called Cremenitz white, from Hungary. Pliny complains that *parætônium* was often adulterated with Cimolian earth, which was used by the fullers at Rome.

Eretria. An ashy white. It is so named from a town of Eubœa, now Trocco.

Cerussa. White lead.

Amulære. Gypsum. *Creta*. Chalk.

YELLOW.—*Sil*. Ochre of four kinds; named Atticum, Lucidum, Syricum, and Marmorosum.

Auripigmentum, or *Arsenicum*. Orpiment.

Cerussa usta. Masticot, first discovered by the fire at the Piræus.

REDS.—*Minium*. Red lead, both natural and artificial. The best native minium was found in a quicksilver mine near Ephesus; and, in endeavouring to extract gold from it, Callias the Athenian discovered vermilion.

Vermilion. The same as now used.

Sinapis. A red earth. The best was found near Lemnos, and was so valuable as to be sold sealed up. It approached near, in color, to minium.

Rubrica. A red earth.

Cinnabar. Native Indian name for dragon's blood.

Sandaracha. A red orpiment.

Sandyx. By some thought to be vegetable red, and obtained somewhat after the manner of our lakes, viz. absorbing the coloring matter of a decoction of the vegetable matter in chalk.

Purpurissum. A lake made from the ingredient used in dyeing purple, being absorbed in tripoli.

Syricum. A mixture of sinopis and sandyx.

Armenium, or Azure, also called *Ceruleum*. Verd'azur, or blue vitriol. Pliny calls it a sand; and says there were three kinds, viz. the Egyptian, the Scythian, and the Cyprian.

Indicum. Indigo.

GREENS.—*Chrysocolla.* Malachite, or mountain green.

Appianum. Another of the same nature.

BLACKS.—*Atramentum.* A common name for all black colors. Pliny speaks of one kind as oozing from the earth; and it may possibly have been some kind of bitumen: of another as being made from smoke of resin and pitch. Burnt lees of wine, or husks of grapes, produced a third, used by Polygnotus and Mycon, under the name of *truginin*; and a fourth was invented and used by Apelles, by burning ivory. That, being made thin by some process, was probably the atramentum or varnish, which he is said to have laid over the surface of his pictures. What this process was is unknown: perhaps, as the mode of painting with wax by heat was practised, it might have been some modification of that material. Of the above coloring substances, Apelles and other ancient artists employed, if we are to give credit to Pliny, only four. Here, however, he seems to have placed himself between the horns of a dilemma: since we are compelled to question either his correctness as to their limitation of colors, or the abundant encomiums which he bestows on their works. Four perfect colors, it is true, with all their modifications and combinations, may be regarded as adequate to every purpose the art of coloring might require. But the celebrated historian has forbidden us to speculate on the possibility of this perfection, by naming the substances; and since the present practice of art, although possessed of substances far more powerful than those enumerated above, denies the knowledge of any four pigments equal to the production of a really fine piece of coloring, we are, as before observed, compelled to suspend our judgment on the subject.

SECT. II.—OF MODERN PAINTING.

The art of painting was revived in Europe about the end of the thirteenth, or beginning of the fourteenth, century. It might have been practised in an humble and obscure manner somewhat earlier; but it was not until a still later period that it made any thing like progress. The human mind, having been plunged into profound ignorance, was destitute of every principle of sound philosophy which enables it to determine on the object of the arts; and consequently the painters contented themselves with works adapted to the general taste, without proportion

and without beauty. In Italy, where the first attempts were made, they were employed chiefly on subjects connected with religious feelings, such as the mysteries of the passion, &c.; and their labors were principally in the adornment of ecclesiastical buildings. Painting, however, did not long continue in the imperfect condition in which it was left by those who first cultivated it among the moderns. It was to be expected that their successors would endeavour to surpass them by joining some degree of theory to the barbarous practice they had adopted. Among the first points of art discovered after its restoration was the principle of perspective, a knowledge of which made the artists capable of expressing what is denominated foreshortening, by means of which a greater degree of truth and effect was afforded to their performances. Cimabue, Giotto, Masaccio, Mantegna, and Luca Signorelli, successively upheld the dawning glories of revived art. The latter, in particular, appears to have been the first who contemplated objects with a discriminating eye; perceived what was accidental, what essential; balanced light and shade, and decided the motion of his figures. He foreshortened with equal boldness and intelligence; and thence it is, probably, that Vasari fancies to have discovered, in the Last Judgment of Michael Angelo, traces of imitation from the Lunetta, painted by Luca in the church of the Madonna, at Orvieto; but the powers which animated him there, and before at Arezzo, are no longer visible in the Gothic medley with which he filled two compartments in the chapel of Sextus IV. at Rome.

Two years after the death of Masaccio, namely, in 1445, was born *Leonardo da Vinci*, whose genius broke forth with a splendor which distanced former excellence: 'made up of all the elements that constitute the essence of genius, favored by education and circumstances, all ear, all eye, all grasp; painter, poet, sculptor, anatomist, architect, engineer, chymist, machinist, musician, man of science, and sometimes empiric, he laid hold of every beauty in the enchanted circle, but, without exclusive attachment to one, dismissed in her turn each. Fitter to scatter hints than to teach by example, he wasted life, insatiate in experiment. To a capacity which at once penetrated the principle and real aim of the art, he joined an inequality of fancy that at one moment lent him wings for the pursuit of beauty, and the next flung him on the ground to crawl after deformity: we owe him chiaro-scuro with all its magic, we owe him caricature with all its incongruities. His notions of the most elaborate finish, and his want of perseverance, were at least equal;—want of perseverance alone could make him abandon his cartoon destined for the great council chamber at Florence, of which the celebrated contest of horsemen was but one group; for to him who could organise that composition, Michael Angelo himself ought rather to have been an object of emulation than of fear: and, that he was able to organise it, we may be certain from the remaining sketch in the Etruria Pittrice lately published, but still more from the admirable print of it by Edelinck, after a drawing of Rubens, who was Leonardo's great ad-

mirer, and has done much to impress us with the beauties of his Last Supper, in the Refectory of the Dominicans at Milan, which he abandoned likewise without finishing the head of Christ, exhausted by a wild chase after models for the heads and hands of the apostles: had he been able to conceive the centre, the radii must have followed of course.' Towards the beginning of the century in which Leonardo da Vinci was born, the use of oil was adopted as a vehicle for painting, and afforded the means of most extensive improvements, particularly in color and effect. The methods to which the former execution of the art had been restricted (namely, distemper, in colors mixed with size and water, and afterwards fresco) were of a limited nature, especially the latter, in which, no means being given to change or retouch the colors without manifest detriment to the work, the artist was hampered in his plan of conduct and management of design. The invention of oil-painting remedied this disadvantage; and, as it allowed endless variety in effects as well as disposition of colors, together with complete harmony throughout the whole, the fancy of the artist was now permitted to take its full swing, and to produce enchantments which successive ages have not been sufficient to dissolve or even weaken.

The circumstance of varnishing over pictures which had been painted in water colors is thought, and perhaps justly, to have been that which led to this important discovery. John Van Eyck, who flourished at Brussels in 1410, is the artist to whom the first exercise of painting with colors ground and mixed with oil has been attributed. At all events, if he was not the first who actually applied it to the purposes of his art, it was he who first made effectual use of it. In any other case, his application of the system would not, to use the words of Vanmander, 'have made as much noise in the world as the discovery of gunpowder by Bertoldo Schwartz had done nearly a century before.' According to this same writer, the art of painting had been carried into Flanders, about the time of Giotto, by some Flemings, who went to Italy for the purpose of receiving instruction in it; and he goes on to describe it as having been practised 'with gum and eggs, at its first commencement, by Cimabue.' The Germans, likewise, acquired the art about the same time; but its most successful progress and achievements were confined to the classic countries of Italy.

'Bartolomeo della Porta, or di S. Marco, the last master of this period, first gave gradation to color, form and masses to drapery, and a grave dignity, till then unknown, to execution. If he was not endowed with the versatility and comprehension of Leonardo, his principles were less mixed with base matter, and less apt to mislead him. As a member of a religious order, he confined himself to subjects and characters of piety; but the few nudities which he allowed himself to exhibit show sufficient intelligence and still more style: he foreshortened with truth and boldness; and, whenever the figure admitted of it, made his drapery the vehicle of the limb it invests. He was the true master of Raffaello,

whom his tuition weaned from the meanness of Pietro Perugino, and prepared for the mighty style of Michel Angiolo Buonarrotti.

'Sublimity of conception, grandeur of form, and breadth of manner, are the elements of Michel Angiolo's style. By these principles he selected or rejected the objects of imitation. As painter, as sculptor, as architect, he attempted, and above any other man succeeded, to unite magnificence of plan, and endless variety of subordinate parts, with the utmost simplicity and breadth. His line is uniformly grand: character and beauty were admitted only as far as they could be made subservient to grandeur. The child, the female, meanness, deformity, were by him indiscriminately stamped with grandeur. A beggar rose from his hand the patriarch of poverty; the hump of his dwarf is impressed with dignity; his women are moulds of generation; his infants teem with the man; his men are a race of giants. This is the 'terribil via' hinted at by Agostino Caracci, though perhaps as little understood by the Bolognese as by the blindest of his Tuscan adorers, with Vasari at their head. To give the appearance of perfect ease to the most perplexing difficulty was the exclusive power of Michel Angiolo. He is the inventor of epic painting, in that sublime circle of the Sistine chapel, which exhibits the origin, the progress, and the final dispensations of theocracy. He has personified motion in the groups of the cartoon of Pisa; embodied sentiment on the monuments of St. Lorenzo; unravelled the features of meditation in the prophets and sybils of the chapel of Sextus; and in the Last Judgment, with every attitude that varies the human body, traced the master-trait of every passion that sways the human heart. Though, as sculptor, he expressed the character of flesh more perfectly than all who went before or came after him, yet he never submitted to copy an individual, Julio the second only excepted, and in him he represented the reigning passion rather than the man. In painting he contented himself with a negative color; and, as the painter of mankind, rejected all meretricious ornament. The fabric of St. Peter, scattered into an infinity of jarring parts by Bramante and his successors, he concentrated; suspended the cupola, and to the most complex gave the air of the most simple of edifices. Such, take him all in all, was M. Angiolo, the salt of art: sometimes he no doubt had his moments of dereliction, deviated into manner, or perplexed the grandeur of his forms with futile and ostentatious anatomy: he met with armies of copyists, and it has been his fate to have been censured for their folly.

'The inspiration of Michel Angiolo was followed by the milder genius of Raffaello Sanzio, the father of dramatic painting, the painter of humanity; less elevated, less vigorous, but more insinuating, more pressing on our hearts, the warm master of our sympathies. What effect of human connexion, what feature of the mind, from the gentlest emotion to the most fervid burst of passion, has been left unobserved, has not received a characteristic stamp from that examiner of man? M. Angiolo came to nature, nature came to Raffaello—he transmitted her

features like a lucid glass unstained, unmodified. We stand with awe before M. Angiolo, and tremble at the height to which he elevates us—we embrace Raffaele, and follow him wherever he leads us. Energy, with propriety of character and modest grace, poise his line, and determine his correctness. Perfect human beauty he has not represented; no face of Raffaele's is perfectly beautiful; no figure of his, in the abstract, possesses the proportions that could raise it to a standard of imitation: form to him was only a vehicle of character or pathos, and to those he adapted it in a mode and with a truth which leaves all attempts at emendation hopeless. His invention connects the utmost stretch of possibility with the most plausible degree of probability, in a manner that equally surprises our fancy, persuades our judgment, and affects our heart. His composition always hastens to the most necessary point as its centre, and from that disseminates, to that leads back, as rays, all secondary ones. Group, form, and contrast, are subordinate to the event, and common-place ever excluded. His expression, in strict unison with, and decided by, character, whether calm, animated, agitated, convulsed, or absorbed by inspiring passion, unmixed and pure, never contradicts its cause, equally remote from tameness and grimace: the moment of his choice never suffers the action to stagnate or to expire; it is the moment of transition, the crisis big with the past and pregnant with the future.—If, separately taken, the line of Raffaele has been excelled in correctness, elegance, and energy; his color far surpassed in tone, and truth, and harmony; his masses in roundness, and his *chiaro-scuro* in effect—considered as instruments of pathos, they have never been equalled; and in composition, invention, expression, and the power of telling a story, he has never been approached.

Whilst the superior principles of the art were receiving the homage of Tuscany and Rome, the inferior but more alluring charm of color began to spread its fascination at Venice, from the pallet of Giorgione da Castel Franco, and irresistibly entranced every eye that approached the magic of *Titiano Vecelli* of Cadore. To no colorist before or after him did nature unveil herself with that dignified familiarity in which she appeared to Titiano. His skill, universally and equally fit for all her exhibitions, rendered her simplest to her most compound appearances with equal purity and truth. He penetrated the essence and the general principle of the substances before him, and on these established his theory of color. He invented that breadth of local tint which no imitation has attained; and first expressed the negative nature of shade: his are the charms of glazing, and the mystery of reflexes, by which he detached, rounded, connected, or enriched his objects. His harmony is less indebted to the force of light and shade, or the artifices of contrast, than to a due balance of color, equally remote from monotony and spots. His backgrounds seem to be dictated by nature. Landscape, whether it be considered as the transcript of a spot, or the rich combination of congenial objects, or as the scene of a phenomenon, dates its origin from him: he is the father of

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portrait painting, of resemblance with form, character with dignity, and costume with subordination.

Another charm was yet wanting to complete the round of art—harmony: it appeared with Antonio Lati, called Correggio, whose works it attended like an enchanted spirit. The harmony and the grace of Correggio are proverbial: the medium which by breadth of gradation unites two opposite principles—the coalition of light and darkness by imperceptible transition—is the element of his style. This inspires his figures with grace, to this their grace is subordinate: the most appropriate, the most elegant attitudes were adopted, rejected, perhaps sacrificed to the most awkward ones, in compliance with this imperious principle: parts vanished, were absorbed, or emerged in obedience to it. This unison of a whole predominates over all that remains of him, from the vastness of his cupolas to the smallest of his oil pictures. The harmony of Correggio, though assisted by exquisite hues, was entirely independent of color: his great organ was *chiaro-scuro* in its most extensive sense; compared with the expanse in which he floats, the effects of Lionardo da Vinci are little more than the dying ray of evening, and the concentrated flash of Giorgione discordant abruptness. The bland central light of a globe, imperceptibly gliding through lucid demitints into rich reflected shades, composes the spell of Correggio, and affects us with the soft emotions of a delicious dream.

The patronage which the art had enjoyed in Italy, from the commencement of its restoration, kept pace with its progress, and was at length perfected by Julius II. and Leo X. at Rome, and by the truly illustrious family of the Medici at Florence. Cosmo di Medici, at the same time that his care and thoughts were directed to the state affairs of the latter province, still found time and means to watch over the development of the fine arts. His grandson Lorenzo (surnamed the Magnificent), who became his successor A.D. 1464, carried these elegant tastes to a still greater extent, and increased, among other praiseworthy actions, that mass of ancient relics which the industrious search prescribed by his predecessor had collected, and which adorned the Medici palace. Desirous of stimulating his countrymen to a successful rivalry with these invaluable treasures, Lorenzo threw open his gardens, wherein they had been deposited, as a school for study, and honored both his own discrimination and the consummate ability of the artist by placing Michel Angiolo at the head of it. By the influence of this potentate, principally, the council hall of the Florentine republic (which had been shortly before rebuilt), was adorned with paintings by Michel Angiolo and Lionardo da Vinci, each being allotted one side of the hall for the exercise of his talents. This may be considered as the first instance of any moment of public civil employment being given to the painters of Italy; their chief exertions having been previously restricted to the decoration of religious edifices.

The internal discords which about this period began to engross the attention of the Florentines

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prevented them from continuing to patronise the arts as they had done; and, added to this, Julius II., who then filled the papal chair, aware of the splendor and glory attached to a state by the successful cultivation of the fine arts, summoned to Rome both Raffaele and Michel Angiolo, who, under his auspices, began those innumerable works in the Vatican which every judicious artist or amateur both thinks and speaks of with enthusiasm. Leo X., his successor, was son of Lorenzo di Medici, and thus possessed a double stimulus, both from the example of his father and his predecessor, to encourage and preside over art. We use but weak words when we say this stimulus was not disregarded. It served to direct the efforts of painting towards the service and splendor of the church over which he swayed, of his rank as a secular sovereign, and of himself as one of the Medici. Thus was the principal seat of the arts transferred from Florence to Rome; which gradually became, in consequence of its many combined advantages, a complete university of art, and the resort of all such as were ambitious to excel therein; and thus may be said to have terminated in the reign of Leo X. the second grand epoch of the art.

‘The resemblance which marked the two first periods of ancient and modern art vanishes altogether as we extend our view to the consideration of the third, or that of refinement, and the origin of schools. The pre-eminence of ancient art, as we have observed, was less the result of superior powers, than of simplicity of aim and uniformity of pursuit. The Hælladic and the Ionian schools appear to have concurred in directing their instruction to the grand principles of form and expression: this was the stamen which they drew out into one immense connected web. The talents that succeeded genius applied and directed their industry and polish to decorate the established system, the refinements of taste, grace, sentiment, color, adorned beauty, grandeur, and expression.’ The Tuscan, the Roman, the Venetian, and the Lombard schools, whether from incapacity, want of education, of adequate or dignified encouragement, meanness of conception, or all these together, separated, and in a short time substituted the medium for the end. Michel Angiolo lived to see the electric shock which his design and style had given to art, propagated by the Tuscan and Venetian schools, as the ostentatious vehicle of puny conceits and emblematic quibbles, or the palliative of empty pomp and degraded luxuriance of color. He had been copied but was not imitated by Andrea Vannuchi, surnamed del Sarto, who in his series of pictures on the life of John the Baptist, in preference adopted the meagre style of Albert Durer. The artist who appears to have penetrated deepest to his mind was Pellegrino Tibaldi of Bologna; celebrated as the painter of the frescoes in the Academic Institution of that city, and as the architect of the Escorial under Philip II. The compositions, groups, and single figures of the Institute exhibit a singular mixture of extraordinary vigor and puerile imbecility of conception, of character and caricature, of style and

manner. Polypheme groping at the mouth of his cave for Ulysses, and Æolus granting him favorable winds, are striking instances of both: than the Cyclops, Michel Angiolo himself never conceived a form of savage energy with attitude and limbs more in unison; whilst the god of winds is degraded to a scanty and ludicrous semblance of Thersites, and Ulysses with his companions travestied by the semibarbarous look and costume of the age of Constantine or Attila; the manner of Michel Angiolo is the style of Pellegrino Tibaldi; from him Goltzius, Hemskirk, and Spranger, borrowed the compendium of the Tuscan’s peculiarities. With this mighty talent, however, Michel Angiolo seems not to have been acquainted: but by that unaccountable weakness incident to the greatest powers, and the severe remembrancer of their vanity, he became the superintendent and assistant tutor of the Venetian Sebastiano, and of Daniel Ricciarelli, of Volterra; the first of whom, with an exquisite eye for individual, had no sense for ideal color, whilst the other rendered great diligence and much anatomical erudition useless, by meagreness of line and sterility of ideas: how far Michel Angiolo succeeded in initiating either in his principles, the far famed pictures of the Resuscitation of Lazarus, by the first (once in the cathedral of Narbonne, and now one of the chief ornaments of the British National Gallery), and the fresco of the Descent from the Cross (in the church of La Trinità del Monte), at Rome, by the second, sufficiently evince: pictures which combine the most heterogeneous principles. The group of Lazarus in Sebastiano del Piombo’s, and that of the women, with the figure of Christ, in Daniel Ricciarelli’s, not only breathe the sublime conception that inspired, but the master hand that shaped them: offsprings of Michel Angiolo himself, models of expression, style, and breadth, they cast on all the rest an air of inferiority, and only serve to prove the incongruity of partnership between unequal powers; this inferiority, however, is respectable when compared with the depravations of Michel Angiolo’s style by the remainder of the Tuscan school, especially those of Giorgio Vasari, the most superficial artist, and the most abandoned mannerist of his time, but the most acute observer of men, and the most dexterous flatterer of princes. He overwhelmed the palaces of the Medici and of the popes, the convents and churches of Italy, with a deluge of mediocrity, commended by rapidity and shameless ‘bravura’ of hand: he alone did more work than all the artists of Tuscany together, and to him may be truly applied, what he had the insolence to say of Tintoretto, that he turned the art into a boy’s toy.’

Giulio Romano was the most eminent of the pupils of Raffaele; but though, like his illustrious master, impressed with the stupendous views and style of Buonarroti, he had by no means equal force of judgment, or delicacy of taste, to guide him in his application of these qualities. It is not so much from his tutored works in the Vatican that we are to judge of the best achievements of Romano as from the grand conceptions, the pathetic or sublime allegories,

and the luxurious reveries which constitute the principal charm of the palace del T, near Mantua: had the artist united purer taste with loftiness of imagination, the magnitude of these performances would perhaps have distanced all competition: but, as it is, they have been likened to a mighty stream, sometimes flowing in a full and limpid vein, but oftener turbid with rubbish. Besides this celebrated artist, Parmegiano, Tintoretto, Polydori, and Caravaggi, were amongst the most skilful of those who continued to uphold the practise of art with ability. No artist ever painted his own mind so powerfully as did Michel Angiolo Amerigi, surnamed Il Caravaggi. To none did nature ever set limits with a more decided hand. Darkness gave him light; into his melancholy cell light stole only with a pale reluctant ray, or broke on it as flashes in a stormy night. The most vulgar forms he recommended by ideal light and shade, and a tremendous breadth of manner.'

Titian and Correggio had, in point of the adoption of their respective principles, fates widely different. That of the former being less pure in itself, and less decided in its object of imitation, than either Angiolo's or Raffaele's, suffered comparatively less from the various applications of it by his followers. It had besides for its support the irresistible fascinations of color, which speak to every spectator, and hence was successfully pursued for a considerable time. But the principle of Correggio was not calculated for this species of longevity. It vanished with its author. His expansive breadth of light; His inexpressible grace (so much talked of, yet so little understood); his perfect harmony and depth of tone have never been otherwise than partially imitated. Parmegiano may be considered to have imbibed his style the most fully. This admirable artist, was, like Raffaele and Giorgione, abstracted from this world in early manhood, and perhaps before the complete capabilities of his mind had been developed.

Such was the condition of the art when, towards the end of the sixteenth century, the Caracci (Ludovico, Agostino, and Annibale), founded at Bologna that *Eclectic School*, the aim of which was, by selecting the beauties, correcting the faults, supplying the defects, and avoiding the extremes of the different styles then practised, to establish a perfect system. The plan was laid down by Agostino Caracci in the following sonnet:—

Chi farsi un buon Pittor cerca, e desia,
Il disegno di Roma habbia alla mano.
La mossa coll' ombrar Veneziano,
E il degno color di Lombardia.
Di Michel' Angiol la terribil via,
Il vero natural di Tiziano,
Del Correggio lo stil puro, e sovrano,
E di un Rafel la giusta simetria.
Del Tibaldi il decoro, e il fondamento,
Del dotto Primaticcio l'inventare,
E un po di gratia del Parmigianino.
Ma senza tanti studi, e tanto stento,
Si ponga l'opre solo ad imitare,
Che qui lascioci il nostro Niccolino.

'Take,' says Agostino, 'the design of Rome, Venetian motion and shade, the dignified tone of

Lombardy's color, the terrible manner of Michel Angiolo, the just symmetry of Raffaele, Titiano's truth of nature, and the sovereign purity of Correggio's style: add to these the decorum and solidity of Tibaldi, the learned invention of Primaticcio, and a little of Parmegiano's grace; but to save so much study, such weary labor, apply your imitation to the works which our dear Nicolo has left us here.' This tone of advice has, it must be confessed, very much the character of a good receipt for making blacking; and it is the more curious that it should be so, inasmuch as the object proposed by these celebrated relatives, although not effectually attained, yet was sufficiently so to arrest for awhile the backward progress of the art. Ludovico, indeed, instead of blindly following the dictates of any master or masters, was the decided pupil of nature: by the simplicity and purity of his taste and execution not only surpassing his kinsmen, Annibale and Agostino, but in a considerable degree restoring the art once more to its first and greatest principles. Annibale, it is true, disputed the point vigorously by his energetic execution and academic acquirement; but the work on which his fame chiefly reposes (the gallery of the Farnese palace at Rome), proves, that if superior to both of his kinsmen in those accomplishments, he was inferior to either in taste, sentiment, or discrimination.

Sir Joshua Reynolds, who saw the works of Ludovico Caracci at Bologna, holds him out, in his Discourses, as the best model for what is more specifically denominated style in painting. 'Ludovico Caracci,' says he ('I mean in his best works'), appears to me to approach the nearest to perfection. His unaffected breadth of light and shadow, the simplicity of coloring, which, holding its proper rank, does not draw aside the least part of the attention from the subject, and the solemn effect of that twilight which seems diffused over his pictures appears to me to correspond with grave and dignified subjects better than the more artificial brilliancy of sunshine which enlightens the pictures of Titian. The school formed by the Caracci for the improvement of their art was entitled *l'Academi degli Desiderosi*, but is better recognised as the Academy of the Caracci, and gave rise to many artists of high name and merited celebrity. But these individuals soon threw aside, at least as completely as they could, the heterogeneous principle on which it was founded, each following the dictates of his own uncontrolled imagination, and differing from his fellow students as well in manner as in objects of imitation. The greatest of these names is that of Guido Rheni, whose grace, although exquisite, was yet artificial; his female forms, more especially, may be considered as abstracts of antique beauty, attended by languishing attitudes, and dressed in voluptuous attire. Domenichino comes next, who, unusually obedient to the prescription of his master, strove to combine with the expression of Raffaele the energy of Annibale Caracci, and the color of Ludovico. Schidone, Lanfranco, Guercino, each studied in the school of the Caracci; but the indefinite nature of its system soon wrought its downfall.

From this period is to be dated the rapid decline of the art in Italy. Da Cortona and Giordana both possessed great powers, but abused them by yielding implicitly to the tasteless suggestions of their employers. Nicholas Poussin, a Frenchman, but grafted on the Roman stock, placed himself in the gap, and endeavoured to stem the torrent of corrupted taste. He reverted, for his models to the pure source of Grecian art: indeed, such was his attachment to the ancients, that he has been said to have copied their relics rather than imitated their spirit. The costume, the mythology, the rites of antiquity, were his elements; his scenery, his landscape, are pure classic ground. The wildness of Salvator Rosa opposes a striking contrast to the classic regularity of Poussin. Terrific and grand in his conceptions of inanimate nature, he was reduced to attempts of hiding, by boldness of hand, his inability of exhibiting her impassioned, or in the dignity of character. With Poussin and Salvator closes all record worth notice of the history of the art in Italy.

The first name which claims our attention, in noticing the progress of painting in *Germany*, is that of Albert Durer. This man's talents were various, his compositions the result of deep study, his thoughts ingenious, his colors brilliant. On the other hand he has been blamed for stiffness and aridity in his outlines, for the absence of taste or grandeur in his expression, for ignorance of costume, of aerial perspective, and of gradation of colors. Lucas of Leyden was Durer's most successful rival, unless we except Holbein, who, if he did not equal him in composition, unquestionably surpassed him, and that greatly, in portrait.

The history of the art in the neighbouring countries of *Flunders* and *Holland* is not distinct from that of Germany until the appearance of those two meteors of art Peter Paul Rubens and Rembrandt Van Rhyn. The former of these extraordinary men produced an immense number of works. He excelled alike in historical painting, in portrait and landscape, in fruit, flowers, and animals. He both invented and executed with the utmost facility; and, to show the extent of his powers, frequently made a great number of sketches of the same subject altogether different, and without allowing any time to elapse between them. His figures appear to be the exact counterpart of his conceptions, and their creation nothing more than a simple act of the will. He had great knowledge of anatomy, but was often hurried away by the impetuosity of his imagination, and his ardor for execution. He preferred splendor to beauty of form, and occasionally sacrificed correctness of design to the magic of color. In short, the qualities of Rubens, generally speaking, indicate a mind full of fire and vigor rather than accuracy or profound thought.

It appears evident, from the works of Rubens, that his method of painting was to lay the colors in their place one at the side of another, and mix them afterwards by a slight touch of the pencil. Titian mingled his tints as they are in nature, in such a manner as to render it impossible to discover where they began or terminated;

the effect is evident, the labor is concealed. Thus Rubens is more dazzling, and Titian more harmonious. In this respect, the first excites the attention, the second fixes it. The carnations of Titian resemble the blush of nature; those of Rubens are brilliant and polished like satin, and sometimes even his tints are so strong and separate, as to have the effect of spots. 'Rubens,' says Sir Joshua Reynolds, 'is a remarkable instance of the same mind being seen in all the various parts of the art. The whole is so much of a piece, that one can scarce be brought to believe but that, if any one of them had been more correct and perfect, his works would not be so complete as they appear. If we should allow a greater purity and correctness of drawing, his want of simplicity in composition, coloring, and drapery would appear more gross.' He was truly the father of Flemish art, so remarkable for brilliancy of coloring, for exactness of drawing, and the magic of their *chiaroscuro*. To these may be added profound arrangement, though not exercised on the most beautiful forms; a composition not destitute of grandeur, a certain air of nobleness in the figures, strong and natural expression; in short, to speak generally, a species of art neither copied from the ancients, nor from the Roman or Lombard schools, and indeed unknown to any other part of the world; and which, during the course of the seventeenth century, furnished those countries wherein it arose with innumerable works of the greatest perfection in their kind.

Rembrandt was a genius of the first order, if we except what relates to form, and in him the choice of low figures is the more offensive, as his compositions frequently required the very opposite. As his father was a miller near Leyden, his education must altogether have depended on the exertion of great talents, and the study of nature. He studied the grotesque figure of a Dutch peasant, or the servant of an inn, with as much application as the greatest masters of Italy would have studied the Apollo Belvidere or the Venus de Medici. In spite, however, of the most portentous deformity, and without dwelling on the spell of his *chiaroscuro*, such were his powers of nature, such the grandeur, pathos, or simplicity of his composition, from the most elevated or extensive arrangement to the meanest or most homely, that the best cultivated eye, the purest sensibility, and the most refined taste, are equally fascinated by them. Like Shakspeare he combined transcendent excellence with many even unpardonable faults, and reconciled us to them. 'He possessed the complete empire of light and shade, and of all the tints which float between them. He tinged his pencil, with equal success, in the cool of dawn, in the noontide ray, in the livid flash, in evanescent twilight, and rendered darkness visible. Though made to bend a stedfast eye' on the bolder phenomena of nature, he knew how to follow her into her calmest abodes, gave interest to insipidity or baldness, and plucked a flower in every desert.' 'Rembrandt's manner of painting (says M. Descamps) is a kind of magic. No artist knew better the

effects of different colors mingled together, nor could better distinguish those which did not agree from those which did. He placed every tone in its place with so much exactness and harmony, that he needed not to mix them, and so destroy what may be termed the flower and freshness of the colors. He made the first draft of his pictures with great precision, and with a mixture of colors altogether particular. He proceeded on his first sketch with vigorous application, and sometimes loaded his lights with so great a quantity of color that he seemed to model rather than to paint. His workshop was occasionally made dark, and he received, through a hole, the light, which fell as he chose to direct it. On particular occasions, he placed behind his model a piece of cloth of the same color with the ground he wanted, and this piece of cloth, receiving the same ray which enlightened the head, marked the difference in a sensible manner, and allowed the painter the power of augmenting it according to his principles.

It is difficult to determine the progress of painting in *France*. Miniature painting, and painting on glass, were early cultivated in that country; and in these two kinds the Italians had often recourse to the French artists. The art, for some time encouraged by Francis I., fell into a state of languor from which it did not recover till the reign of Louis XIII. Jaques Blanchard, who has been called the French Titian, flourished about this period; but, as he died young, and without educating any pupils to perpetuate his manner, he cannot be regarded as the master of any school. We have already spoken of Nicholas Poussin, in our review of Italian art, to which he more properly belonged. But the seeds of mediocrity which the Caracci had attempted to scatter over Italy found a more congenial soil, and reared an abundant harvest, in France: 'to mix up a compound from something of every excellence in the catalogue of art was the principle of their theory, and their aim in execution. It is in France where Michel Angelo's right to the title of a painter was first questioned. The fierceness of his line, as they call it, the purity of the antique, and the characteristic forms of Raffaele are only the road to the academic vigor, the librated style of Annibale Caracci, and from that they appeal to the model; in composition they consult more the artifice of grouping, contrast, and richness, than the subject or propriety; their expression is dictated by the theatre. From the uniformity of this process, not to allow that the school of France offers respectable exceptions would be unjust; without recurring again to the name of Nicholas Poussin, the works of Eustache le Sueur, Charles le Brun, Sebastien Bourdon, and sometimes Pierre Mignard, contain original beauties and rich materials. Le Sueur's series of pictures in the Chartreux exhibit the features of contemplative piety, in a purity of style and a placid breadth of manner that moves the heart. His dignified martyrdom of St. Laurence, and the burning of the magic books at Ephesus, breathe the spirit of Raffaele. The powerful comprehension of a whole, only equalled by the fire which pervades every part of the battles of Alexander,

by Chas. le Brun, would entitle him to the highest rank in history, had the characters been less mannered; had he not exchanged the Argyraspsids and the Macedonian phalanx for the compact legions of the Trajan pillar; had he distinguished Greeks from barbarians rather by national feature and form than by accoutrement and armour. The seven works of charity by Seb. Bourdon teem with surprising, pathetic, and always novel images; and in the plague of David, by Pierre Mignard, our sympathy is roused by energies of terror and combinations of woe, which escaped Poussin and Raffaele himself.

The obstinacy of national pride, perhaps more than the neglect of government or the frown of superstition, confined the labors of the *Spanish* school, from its obscure origin at Sevilla to its brightest period, within the narrow limits of individual imitation. But the degrees of perfection attained by Diego Velasquez, Joseph Ribera, and Murillo, in pursuing the same object by means as different as successful, impresses us with deep respect for the variety of their powers. That the great style ever received the homage of Spanish genius, appears not; neither Alfonso Beruguette nor Pelegrino Tibaldi left followers: but that the eyes and the taste, fed by the substance of Spagnuolo and Murillo, should without reluctance have submitted to the gay volatility of Lucca Giordano, and the ostentatious flimsiness of Sebastian Conca, would be matter of surprise, did we not see the same principles successfully pursued in the plafonds of Antonio Raphael Mengs, the painter of philosophy, as he is styled by his biographer D'Azara. The cartoons of the frescoes painted for the royal palace at Madrid, representing the apotheosis of Trajan and the temple of Renown, exhibit less the style of Raffaele in the nuptials of Cupid and Psyche in the Farnesina, than the gorgeous but empty bustle of Pietro da Cortona.

We conclude this sketch of the history of painting by a brief notice of its progress in *our own country*. But little is known respecting the existence of painting in England previously to the reign of Henry VIII., who patronised the talents of Holbein and Torregiano, and invited Titian to visit his court. It was but a short period before that these islands had begun to cultivate the elegant arts of life, and to shake off the influence of rude and ignorant manners. The choice of subjects, however, prescribed by Henry and his courtiers to those eminent men who then resided in England, was unquestionably to be lamented, and suffers extremely from a contrast with what was done by his rival, Francis I., the French king, who employed and enriched Andrea del Sarto, Rustici, Rosso, Primaticcio, Cellini, and Niccolo, not to aggregate a mass of painted and chiselled treasures for the mere gratification of his own vanity, but to scatter the seeds of real taste throughout France; while, on the other hand, Torregiano and Holbein under Henry, as well as Frederigo Zuchere under Elizabeth, were condemned to Gothic work and portrait painting. The Reformation, however great the satisfaction with which the English people justly regard it, was, without doubt, highly injurious to the cultivation of the prin-

ciples of art. The stern spirit of the early reformers led them not only into a total disregard, but into an absolute condemnation, of every thing ornamental or superfluous; and the arts of painting and sculpture, more particularly, owing their principal splendor and success to the munificent patronage of the mother church, fell under the peculiar and powerful ban of her revolted daughter. If, on the contrary, at this juncture, when the national spirit was remodelled, and when that stupendous change laid open almost all that was grand in intellect or spirited in action, the fine arts had participated in the vigorous upspringing, and had received the encouragement instead of the reprobation of those lofty-minded theologians, it is more than probable that England would at this day have had to boast, in addition to her brilliant and recognised claims on the score of literature and science, the glory of exhibiting a national and superior style of historical painting. But, as it was, the injunction of Henry against images (which had been made the instruments of idolatrous delusions in churches), and still more the rigid edicts of Edward VI. and Elizabeth against statues and pictures in general, while they suddenly checked the career of historical and religious painting, seem to have set a mark of disgrace on the arts themselves, and to have left them, for a considerable length of time, a prey to indifference and scorn.

Charles I., it is true, strove to introduce a feeling for the art; and, whilst Rubens sojourned amongst us in the character of an ambassador from the court of Madrid, employed him to paint the ceiling of his newly erected banquetting room (now the chapel) at Whitehall. He also, by countenancing and patronising that prince of portrait painters, Vandyck, as well as other foreigners of talent, conferred on his country a treasure for which we trust she is at length grateful. Charles collected a very considerable gallery of pictures, and, at the instance of Rubens, bought the invaluable cartoons of Raffaele, now the chief and envied ornament of Hampton Court: he likewise, at a cost of £20,000, purchased the cabinet of the duke of Mantua, and commissioned an artist to copy for him the works of Titian in Spain. But the exertions of Charles were frustrated and intercepted by his unhappy destiny; and the whole of his artistical collection was sold and dispersed by the parliament of 1643, which issued a mandate 'that all pictures which had the representation of the Saviour or the Virgin Mary in them should be burnt.' As if to complete this unfortunate distribution, so prejudicial to the interests of the art in England, a large part of this magnificent collection, which had been on the Restoration replaced in the palace of Whitehall, was utterly destroyed by the fire which consumed that edifice.

Charles II., with the cartoons of Raffaele in his possession, and with the splendid pictorial ornaments of Whitehall before his eyes, permitted the absurdities of Verrio, and the dull mimicries of Gennaro to render unsightly the walls of his palaces, whilst the genuine talent of Sir Peter Lely was degraded in painting the Cymons or Iphigenias of his voluptuous court. This distin-

guished artist, the rival, and in many instances the successful rival, of Vandyck, was succeeded by Sir Godfrey Kneller, who, with undoubted natural abilities, suffered the love of gain, when those abilities had lifted him into notice, to pervert his taste and deaden his ambition.

In historical painting no British artist had appeared to rival the performances of foreign excellence until Sir James Thornhill, born in 1677, arose to dispute the honors of the palette with La Guerre, whom many among our nobility had employed to decorate their halls and staircases. Sir James Thornhill received a commission from the state to decorate St. Paul's cathedral and Greenwich Hall, in which performances he was assisted by a German artist of the name of Andre. It will not, however, be imagined that much value was set on the talents of these gentlemen, when we state that Sir James's engagement was £2 per square yard! Thornhill's merits, indeed, as an historical painter, cannot be said to demand any very great commendation; still he was the father of English art in that particular, and for a long time had no successful imitator. 'In the commencement of the reign of George I. (says Sir Horace Walpole) the arts of England were sunk almost to the lowest ebb.' Portraiture, it is true, had been successfully practised by Dobson, Riley, Cooper, Greenhill, Jervas, and Richardson, but by none with any remarkable eminence.

It was not, however, to continue always thus; and the time at length arrived when the English artists appeared not only desirous but capable of raising the character of their country in this respect, at least, to a level with that of any other nation of Europe. The principal difficulty in the outset of this event was to rescue the art from the degrading influence of a vicious taste, to retrace the steps of our predecessors (or rather to burst the bandages in which they had enthralled us), and resort at once to the original principle of imitation; which, when pure and select, is the only sound basis of the art. The first step towards this reformation was the establishment of a school for drawing from the living figure. This had been begun by Sir James Thornhill, in most inexplicable conjunction with Sir Godfrey Kneller, who, one would imagine, from his latter works, had left all consideration of the value of such a thing far behind. Thus, however, he assisted in laying the foundation of a remedy for the evil which he, more than any other man, had occasioned. This school Sir James continued at his own house in the Piazza for some years. His death, in 1734, obliged the artists to procure another situation, which was not effected without some difficulty; for the people were so unprepared to regard the study from the naked figure as necessary to artists, that their meetings were even suspected to be held for immoral purposes. Another school was at length formed by Michael Moser, a native of Schaffhausen, and a chaser by profession, and six other artists, principally foreigners, the management resting with Moser. After a while they were visited by Hogarth and others, and a larger body was formed in consequence, who established themselves in Peter's Court, St. Mar-

tin's Lane, in the year 1739. Having acquired some property by combined exhibitions of their works they solicited a charter of incorporation, and, the scheme being sanctioned by his late majesty, their charter was granted in 1765. But, dissensions arising in the body, a secession of many of its principal members took place, and the result was the establishment of the Royal Academy in 1768, under the more immediate patronage of the king; Sir Joshua Reynolds being nominated its first president.—*Introduction to Edwards's Anecdotes of Painters.*

The general taste of the country was, in fact, awakened and purified with respect to art, and, on the success of Hogarth, Reynolds, and Wilson, several societies were formed throughout the kingdom for the avowed purpose of patronising and cultivating it.

Richardson, whose tracts ought to be known to every student and amateur of painting, died in 1745, at the advanced age of eighty. He was a bad painter, but his treatises on the art are full of enthusiasm, and of judicious observations on the theory of the art. Of one of these Sir Joshua Reynolds declared, that it had confirmed him in his love of the art, and elevated his ideas of its professors. Richardson contended strenuously for the propriety of painting portraits in the costume of their time; thus striking at the absurd system of flowing robes which had been adopted by Kneller. This suggestion of Richardson's, dictated by common sense, produced the happiest effects. The nonsensical draperies which had invested the represented persons of the gentlemen, together with the ungraceful silk robe which they contrived to throw negligently over the shoulders of the ladies, were laid aside; and the succeeding portrait painters, headed by a son-in-law of Richardson (Hudson, and a Frenchman of the name of Van Loo brother of Carle Van Loo), began to dress their sitters in all the formality of the day; Hudson being assisted by a Fleming of the name of Van Alken, in the representation of the silks and laces. Nor did the reformation stop here: it extended into the region of historical painting; and Hayman, the successor of Sir James Thornhill, perceived the propriety of retaining the costume properly appertaining to those figures introduced into his paintings; no longer, by an unmeaning affectation, changing them into Grecian heroes or Roman centurions. This period might be denominated the infancy of English art; and it is not a little curious, that at the time when painting was verging towards a state of hopeless decline all over the continent of Europe, it should have revived, and that to no small purpose, in these islands, the inhabitants of which had been frequently taunted by foreigners as unable to execute a fine painting.

We shall not dwell on its incipient state of improvement; indeed, the commendations bestowed on the painters alluded to above regard the principle of imitation rather than the thing imitated, since nothing could possibly be more untasteful or repulsive than the stiff, starch, and unsightly uniform (both male and female) of those days. But the principle of attention to actual representation once established, it soon

produced the fruits of a better taste in the art generally; and, accordingly, it was not long before the matchless talent of Hogarth beamed forth in unapproachable splendor to gild the onward progress of the muse of painting, and to herald the appearance of a kindred genius in the person of Sir Joshua Reynolds.

Hogarth traced out a department in painting which was at once novel and exciting—and he filled it:

Within that circle none durst walk but he!

His pictures are pregnant with meaning. Each one tells you a whole history. He had the faculty to grasp all the minutiae of the scene which he placed before you—nothing was suffered to escape.

'It is the fashion,' says Mr. Charles Lamb, 'with those who cry up the great historical school in this country, to exclude Hogarth from that school, as an artist of an inferior and vulgar class. Those persons seem to me to confound the painting of subjects in common or vulgar life with the being a vulgar artist. The quantity of thought which Hogarth crowds into every picture would alone unvulgarise every subject which he might choose. Let us take the lowest of his subjects, the print called Gin Lane. Here is plenty of poverty and low stuff to disgust upon a superficial view: and accordingly a cold spectator feels himself immediately disgusted and repelled. I have seen many turn away from it, not being able to bear it. The same persons would perhaps have looked with great complacency upon Poussin's celebrated picture of the Plague at Athens. Disease and death and bewildering terror, in Athenian garments, are endurable, and come, as the delicate critics express it, within the 'limits of pleasurable sensation.' But the scenes of their own St. Giles's, delineated by their own countryman, are too shocking to think of. Yet if we could abstract our minds from the fascinating colors of the picture, and forget the coarse execution (in some respects) of the print, intended as it was to be a cheap plate, accessible to the poorer sort of people, for whose instruction it was done, I think we could have no hesitation in conferring the palm of superior genius upon Hogarth, comparing this work of his with Poussin's picture. There is more of imagination in it—that power which draws all things to one—which makes things animate and inanimate, beings with their attributes, subjects and their accessories, take one color, and serve to one effect. Every thing in the print, to use a vulgar expression, tells. Every part is full of 'strange images of death.' It is perfectly amazing and astounding to look at. Not only the two prominent figures, the woman and the half-dead man, which are as terrible as any thing which Michel Angiolo ever drew, but every thing else in the print contributes to bewilder and stupify—the very houses, as I heard a friend of mine express it, tumbling all about in various directions, seem drunk—seem absolutely reeling from the effect of that diabolical spirit of phrenzy which goes forth over the whole composition. To show the poetical and almost prophetic conception in the artist, one little

circumstance may serve. Not content with the dying and dead figures, which he has strewed in profusion over the proper scene of the action, he shows you what (of a kindred nature) is passing beyond it. Close by the shell, in which, by direction of the parish beadle, a man is depositing his wife, is an old wall, which, partaking of the universal decay around it, is tumbling to pieces. Through a gap in this wall are seen three figures, which appear to make a part in some funeral procession which is passing by on the other side of the wall, out of the sphere of the composition. This extending of the interest beyond the bounds of the subject could only have been conceived by a great genius. The faces of Hogarth have not a mere momentary interest, as in caricatures, or those grotesque physiognomies which we sometimes catch a glance of in the street, and, struck with their whimsicality, wish for a pencil and the power to sketch them down—and forget them again as rapidly; but they are permanent abiding ideas. Not the sports of nature, but her necessary eternal classes. We feel that we cannot part with any of them, lest a link should be broken. It is worthy of observation, that he has seldom drawn a mean or insignificant countenance. If there are any of that description, they are in his *Strolling Players*, a print which has been cried up by lord Orford as the richest of his productions; and it may be, for what I know, in the mere lumber, the properties, and dead furniture of the scene; but in living character and expression it is (for Hogarth) lamentably poor and wanting; it is, perhaps, the only one of his performances at which we have a right to feel disgusted. Hogarth's mind was eminently reflective; and, as it has been well observed of Shakspeare, that he has transfused his own poetical character into the persons of his drama (they are all more or less poets), Hogarth has impressed a thinking character upon the persons of his canvas. This remark must not be taken universally. The exquisite idiotism of the little gentleman in the bag and sword beating his drum in the print of the *Enraged Musician*, would of itself rise up against so sweeping an assertion. But I think it will be found to be true of the generality of his countenances. The knife-grinder and Jew flute-player in the plate just mentioned may serve as instances, instead of a thousand. They have intense thinking faces, though the purpose to which they are subservient by no means required it; but indeed it seems as if it was painful to Hogarth to contemplate mere vacancy or insignificance. This reflection of the artist's own intellect from the faces of his characters is one reason why the works of Hogarth, so much more than those of any other artist, are objects of meditation. Our intellectual natures love the mirror which gives them back their own likenesses. The mental eye will not bend long with delight upon vacancy.

'Another line of eternal separation between Hogarth and the common painters of droll or burlesque subjects, with whom he is often confounded, is the sense of beauty, which in the most unpromising subjects seems never wholly to have deserted him. 'Hogarth himself,' says

Mr. Coleridge, from whom I have borrowed this observation, speaking of a scene which took place at Ratzeburg, 'never drew a more ludicrous distortion, both of attitude and physiognomy, than this effect occasioned; nor was there wanting beside it one of those beautiful female faces which the same Hogarth, in whom the satirist never extinguished that love of beauty which belonged to him as a poet, so often and so gladly introduces as the central figure in a crowd of humorous deformities; which figure (such is the power of true genius) neither acts nor is meant to act as a contrast, but diffuses through all, and over each of the group, a spirit of reconciliation and human kindness; and even when the attention is no longer consciously directed to the cause of this feeling, still blends its tenderness with our laughter: and thus prevents the instructive merriment at the whims of nature, or the foibles or humors of our fellow-men, from degenerating into the heart-poison of contempt or hatred.' To the beautiful females in Hogarth, which Mr. C. has pointed out, might be added the frequent introduction of children (which Hogarth seems to have taken a particular delight in) into his pieces. They have a singular effect in giving tranquillity and a portion of their own innocence to the subject. The baby riding in its mother's lap in the *March to Finchley* (its careless innocent face placed directly behind the intriguing time-furrowed countenance of the treason-plotting French priest) perfectly sobers the whole of that tumultuous scene. The boy mourner winding up his top with so much unpretending insensibility in the plate of the *Harlot's Funeral* (the only thing in that assembly that is not a hypocrite) quiets and soothes the mind that has been disturbed at the sight of so much depraved man and woman kind.'

Sir Joshua Reynolds was the first president of the Royal Academy; and on his return from Rome, at a previous part of his life, carried the art (at least as far as regards portrait-painting) to its very highest point of perfection. The life, the grace, the truth of his portraits have, for a long series of years, demanded and received the tribute of universal admiration. His best specimens are perhaps inferior to no pictures of the same kind in existence, and in some points may be said to exceed the performances of any preceding artist. He not only appears to have always aspired to attain the highest excellence of coloring, but in very many instances he did attain it; there being no one particular in which, generally speaking, he left his contemporaries so far behind him as in the richness and mellowness of his tints, when his colors were successful and permanent.

Though the landscapes Sir Joshua has given in the background of many of his portraits are eminently beautiful, he seldom exercised his hand in regular landscape-painting; but in the historical department he took a wider range; and, by his successful exertions in that higher branch of his art, he not only enriched various cabinets at home, but extended the fame of the English school to foreign countries.

And here it may not be amiss to observe

upon the notion which prevails of the coloring having faded and perished in the majority of Sir Joshua Reynolds's works. This is not correct: far the greater part of his pictures preserve their original hue, and are in perfect preservation. Those which have failed have been mentioned again and again, and thus have been multiplied in the imaginations of connoisseurs.—Nor should it be forgotten, that the pictures of other considerable painters have not been more durable than his. As many perished pictures of Gainsborough are, it has been affirmed, to be found in cabinets as of Sir Joshua Reynolds. Even the great colorists of the continent were not wholly free from this defect. Several pictures of Titian and Vanduyck, and more particularly of the exquisite French painter Watteau, have entirely lost that brilliancy which, without doubt, they once possessed.

What Reynolds did for portrait-painting, his distinguished contemporary, Wilson, did for landscape. He also had studied at Rome, and brought home thence a refined taste, and a power of execution at once chaste, glowing, and brilliant: while, in the historical department, Sir Joshua's successor, the late lamented Mr. West, without rivalling either of the three great names just mentioned, yet displayed sufficient ability to throw completely into the background what had been previously produced by the successors of Sir James Thornhill, Hayman, Pine, and Whale. Besides West, we cannot forbear to make honorable mention of the names of Romney, Opie, and Barry.

The present state of painting in this country is very encouraging to the lover of art. In portrait, besides the highly-gifted president of the academy, Sir Thomas Lawrence, we have several other eminent professors: in landscape and marine subjects, Turner and Callcott are at the head of a numerous body of followers. The pencil of Wilkie throws a brilliant lustre over both the humorous and pathetic departments of art; and in the arduous walk of history (a walk of art which, although it is entitled, when successfully pursued, to the highest honors, is too often followed without either profit or distinction,) there are several names which we might select, whose bearers appear to us qualified to elevate the national reputation far higher than it has ever hitherto been raised. For the truth of these observations, we need only appeal to the annual exhibitions both at Somerset House and at the British Institution.

It would lead us beyond the limits of this work to go much at large into the theory and practice of painting. This article would be, however, incomplete did we not subjoin a few observations on these subjects.

PART II.

THEORY AND PRINCIPLES OF THE ARTIST'S STUDIES.

SECT. I.—GENERAL PRINCIPLES.

And first, of *anatomy*. It would be unnecessary to cite what the greatest authorities have declared with respect to the requisiteness of this

point of knowledge. It must be obvious that a man unacquainted with the construction and form of the several bones that govern and support the human frame, or who does not understand the way in which the muscles moving these bones are fixed to them, can make nothing of what appears to them through the integuments with which they are covered; which appearance, however, is one of the noblest objects of the pencil. It seldom happens that the painter's business is limited to the mere exact copying of an object before him. For instance, if he has to depict gestures any way sudden, or motions any way violent, a living model would scarcely answer his purpose, since it holds but two or three instants, soon growing languid, and settling into a fixed attitude, which is produced by an instantaneous concourse of the animal spirits. Here then the painter's acquaintance with anatomy should come into play, his knowledge not only of the skeleton, but of the origin, progress, and shape of the muscles which cover the bones, and also the different degrees in which nature has clothed these muscles with fat.

It was the intention of Michael Angelo to give the public a complete treatise on this subject, and it is much to be regretted that he never should have accomplished so desirable a purpose. This sublime painter having observed (as appears in *Conditi's* life of him) that Albert Durer was deficient with respect to anatomy, resolved to compose a theory founded on his long practice: and surely no one could be better qualified to furnish anatomical precepts than he who, as competitor of Leonardo da Vinci, formed that famous cartoon of naked bodies which was studied by Raffaele himself, and subsequently obtained the approbation of the Vatican. The want of Michael Angelo's precepts may be in some measure compensated by books written on the same subject by Moro, Cesio, and Tortelat; and more recently by Boucherdon, one of the most famous statuarys of France. Nothing, however, can be of equal service with the lessons of some able dissector, besides which a good deal of improvement may be acquired by the study of anatomical casts.

It was the particular happiness of the Greeks to be capable of characterising and expressing the various parts of the human body much better than we can pretend to do; towards this end their earnest study of the naked figure mainly contributed, as did also the constant exercise taken by the Grecian youth in gymnastic games, which, by development and display of the muscular system, afforded the painter and statuary far more perfect models than those at present employed. It has been well suggested, that the student might make himself more thoroughly master of the science of anatomy by taking one part of any well-known figure, the thighs of the *Laocoon*, for instance, and adding to them legs suitable to that state in which the muscles of the thighs are represented. To the simple contour of an anatome, or statue, he might add the parts included by it, and give it a system of muscles conformable to the quality of that particular contour. Exercises of this nature would soon establish him in the most fundamental principles

of painting, especially if he had an opportunity of comparing his drawings with the statue or cast from which the parts given him to work upon were taken. See ANATOMY.

It cannot fail to appear obvious that the study of *symmetry* should immediately succeed that of anatomy; since it would not much avail us to be acquainted with the different parts of the human body, and their several offices, were we, on the other hand, ignorant of the relative order and proportion of those parts to one another. The Greek sculptors were as eminent for the just symmetry of members as for anatomical skill. Polygnotus executed a statue which he denominated the Rule, from which other artists might take measures for every part of the human body. These measures, not to speak of those books which professedly treat of them, may now be derived from the Apollo Belvedere, the Laocoon, the Venus de Medici, and particularly the Antinous, which was the rule adopted by Nicholas Poussin. See SYMMETRY.

Perspective, according to Leonardo da Vinci (an authority from which there can be no appeal) is to be considered as the reins and rudder of painting. It teaches the proportion in which the parts fly from, and lessen on, the eye; how figures should be marshalled upon a plane surface, and foreshortened. It contains, in a word, the whole rationale of design.

As the demonstration of the rules of perspective depends on the doctrine of proportions, on the properties of similar triangles, and on the intersection of planes, it is desirable that an abridgment of Euclid should be put into the hands of the young painter, in order that he may understand these rules fundamentally, and not stand confined to a blind practice of them: at the same time, there is nothing in this author relative to the art of painting which might not easily be acquired in a few months. See PERSPECTIVE.

The study of *optics*, so far as it is requisite to determine the proportion in which objects are to be illuminated or shaded, should proceed hand in hand with that of perspective: and this in order that the shades cast by figures upon the planes on which they stand may fall properly, and be neither too strong nor too light:—in a word, that those most beautiful effects of the *chiaro-scuro* may run no risk of ever deviating from truth, which, sooner or later, is sure to render itself visible. See OPTICS.

'Coloring,' says Sir Joshua Reynolds, 'though it may at first sight appear a part of painting merely mechanical, yet it still has its rules, and those grounded upon that presiding principle which regulates both the great and the little in the study of a painter. By this, the first effect of the picture is produced; and, as this is performed, the spectator, as he walks the gallery, will stop, or pass along. To give a general air of grandeur at first view, all trifling, or artful play of little lights, or attention to a variety of tints, is to be avoided; a quietness and simplicity must reign over the whole work; to which a breadth of uniform and simple color will very much contribute. Grandeur of effect is produced by two different ways, which seem

entirely opposed to each other. One is, by reducing the colors to little more than *chiaro-scuro*, which was often the practice of the Bolognian school; and the other, by making the colors very distinct and forcible, such as we see in those of Rome and Florence; but still the presiding principle of both these manners is simplicity. Certainly, nothing can be more simple than monotony; and the distinct blue, red, and yellow colors which are seen in the draperies of the Roman and Florentine schools, though they have not that kind of harmony which is produced by a variety of broken and transparent colors, have that effect of grandeur which was intended. Perhaps these distinct colors strike the mind more forcibly, from there not being any great union between them; as martial music, which is intended to rouse the nobler passions, has its effect from the sudden and strongly marked transitions from one note to another, which that style of music requires; whilst, in that which is intended to move the softer passions, the notes imperceptibly melt into one another.

Drapery, being also a most important branch of the art, accordingly requires the greatest study and attention. It but seldom occurs that a painter has only naked figures to represent; and it may be observed, that the flowing of the folds in every garment depends principally on the relief of the parts which lie under it. A certain author, whose name we do not recollect, remarks, that as the inequalities of a surface are discoverable by the inequalities in the water that runs over it, so the shape and posture of the members must be discernible by the folds of the vestment which covers them.

Of landscape and architecture.—The most eminent landscape painters are Claude Lorraine, Poussin, and Titian. The former of these celebrated men, although he reigns triumphantly in every department of landscape, and in marine subjects also, yet might be said to have applied himself principally to express the various phenomena of light, particularly those observable in the heavens; and thanks to the delicious climate of Italy, where he studied and practised, he has bequeathed us the brightest skies, and the most splendid horizons, that can be imagined. Poussin was distinguished, and deserved to be so, for his uncommon application. His compositions are fraught with imagery of a classical as well as delightful character, being set off with learned episodes, such as poets reciting their verses in the woods, Grecian youths exercising gymnastic games, &c. Titian may be styled the Homer of landscape painting. One of the finest landscapes that perhaps ever issued from mortal hands is the background of his Martyrdom of St. Peter; which has so much truth, so much variety, so much bloom, that it is almost impossible to behold without desiring to make an excursion into it. Paolo Veronese is, in architecture, what Titian is in landscape. To excel in landscape, we must, above all things, study nature; to excel in architecture we must regard principally the finest among the works of art: such, for instance, as the elevations of ancient edifices, together with the fabrics of those moderns who have best studied and best copied antiquity.

'Invention in painting does not,' according to Sir Joshua Reynolds, 'imply the invention of the subject; for that is commonly supplied by the poet or historian. With respect to the choice, no subject can be proper that is not generally interesting. It ought to be either some eminent instance of heroic action or heroic suffering. There must be something either in the action, or in the object, in which men are universally concerned, and which powerfully strikes upon the public sympathy. As it is required that the subject selected should be a general one, it is no less necessary that it should be kept unembarrassed with whatever may any way serve to divide the attention of the spectator. Whenever a story is related, every man forms a picture in his mind of the action and expression of the persons employed. The power of representing this mental picture on canvas is what in a painter we call invention. And as, in the conception of this ideal picture, the mind does not enter into the minute peculiarities of the dress, furniture, or scene of action; so, when the painter comes to represent it, he contrives those little necessary concomitant circumstances in such a manner, that they shall strike the spectator no more than they did himself in his first conception of the story. The great end of the art is to strike the imagination. The painter therefore is to make no ostentation of the means by which this is done; the spectator is only to feel the result in his bosom. An inferior artist is unwilling that any part of his industry should be lost upon the spectator. He takes as much pains to discover, as the greater artist does to conceal, the marks of his subordinate assiduity. In works of the lower kind, every thing appears studied and encumbered; it is all boastful art, and open affectation. The ignorant often part from such pictures with wonder in their mouths, and indifference in their hearts. But it is not enough in invention that the artist should restrain and keep under all the inferior parts of his subject; he must sometimes deviate from vulgar and strict historical truth, in pursuing the grandeur of his design. How much the great style exacts from its professors to conceive and represent their subjects in a poetical manner, not confined to mere matter of fact, may be seen in the cartoons of Raffaele. In all the pictures in which the painter has represented the apostles, he has drawn them with great nobleness; he has given them as much dignity as the human figure is capable of receiving; yet we are expressly told in Scripture they had no such respectable appearance; and of St. Paul, in particular, we are told by himself that his bodily presence was mean. Alexander is said to have been of a low stature: a painter ought not so to represent him. Agesilaus was low, lame, and of a mean appearance: none of these defects ought to appear in a piece of which he is the hero. In conformity to custom, I call this part of the art history painting; it ought to be called poetical, as in reality it is.

'As in invention, so likewise in expression, care must be taken not to run into particularities. Those expressions alone should be given to the figures which their respective situations generally produce. Nor is this enough; each

person should also have that expression which men of his rank generally exhibit.—The joy or the grief of a character of dignity is not to be expressed in the same manner as a similar passion in a vulgar face. Upon this principle Bernini, perhaps, may be subject to censure. This sculptor, in many respects admirable, has given a very mean expression to his statue of David, who is represented as just going to throw the stone from the sling; and, in order to give it the expression of energy, he has made him biting his under lip. This expression is far from being general, and still farther from being dignified. He might have seen it in an instance or two; and he mistook accident for generality.'

Of Portraiture.—There are four things necessary to make a portrait perfect; viz. air, coloring, dress, and attitude.

1. The *air* respects the lines of the face, the head attire, and the size. The lines of the face depend upon exactness of draught, and agreement of the parts; for it is not exactness of design in portraits that gives spirit and true air, so much as the agreement of the parts at the very moment when the disposition and temperament of the sitter are to be caught. We see several portraits, which, though correctly designed, have a cold, languishing, and stupid air; whilst others, less correct in design, strike us, however, at first sight, as a resemblance.

Few painters are careful enough to put the parts well together: Sometimes the mouth is smiling, and the eyes are sad; at other times the eyes are cheerful, and the cheeks lank; by which means their work has a false air, and looks unnatural. Of all the parts of the face, that which contributes most to likeness is the nose; it is therefore of great moment to set and draw it well. Though the hair of the head seems to be part of the dress which is capable of various forms without altering the air of the face; yet the head attire which one has been most accustomed to, creates such a likeness, that we scarce know a familiar acquaintance on his putting on a wig, or any other head attire, different from that which he used to wear. It is necessary, therefore, as far as possible, to take the air of the head ornament, and make it accompany and set off that of the face.

As to the stature, it contributes so much to likeness, that we very often know people without seeing their face: it is, therefore, extremely proper to draw the size of a full length portrait, after the sitter himself, and in such an attitude as he usually appears in. In sitting, the person appears to be of a less free make, through the heaving of his shoulders: wherefore, to adjust his size, it is proper to make him stand for a short time in the posture we would give him, and then make our observations. All deformities, when the air and temper may be discovered without them, ought to be either corrected or omitted in portraits. But in some faces we cannot be too exact, whether the parts be beautiful or not; as every thing in an important picture is precious that is faithful. But, after whatever manner the painter acquits himself in this point, let him never forget good air and grace; and that there are moments particularly advantageous for hitting them off.

2. *Coloring*, in portraiture, is an effusion of nature, often connected with the true tempers of persons; and, the temper being essential to likeness, it ought to be handled as exactly as the design. This part is the more valuable, as it is rare and difficult to hit. Many painters have come to a likeness by strokes and outlines; but few have shown in colors the tempers of persons. Two points are necessary in coloring; exactness of tints, and the art of setting them off. The former is acquired by practice, in examining and comparing the colors we see in life with those by which we would imitate it; and the art of those tints consists in knowing what one color will produce when set by another, and in making good what either distance or time may abate on the glow and freshness of the colors. A painter who does nothing more than what he sees, will never arrive at a perfect imitation; for, though his work may seem on the easel to be good to him, it may not appear so to others, nor perhaps even to himself at a distance. A tint, which, near, appears disjoined, and of one color, may look of another at a distance, and be confounded in the mass it belongs to. If you would have your work, therefore, to produce a good effect in the place where it is to hang, both the colors and lights must be a little loaded, but with discretion. In this point consult Titian, Rubens, Vandyck, and Rembrandt's methods: for indeed their art is wonderful. The tints usually require three times of observation. The first is at the person's first sitting down, when he has more spirit and color than ordinary. The second is when, being composed, his look is as usual. And the third is when, through tiredness by sitting in one posture, his color alters to what weariness usually creates. On which account, it is best to keep to the sitter's usual tint, a little improved.

3. In the *dress and draperies* of men's portraits, we need only observe great truth and force; but in women's there must also be charms; whatever beauty they possess must appear in a fine light, and their blemishes must be softened. For this reason a white, lively, and bright tint, ought never to be set off by a fine yellow, which would make it look like plaster; but rather by colors inclining to green, blue, or gray, or such others as, by their opposition, may make the tint appear more fleshy than usual in fair women. Vandyck often made a fillemot-colored curtain for his ground; but that color is soft and brown. Brown women, on the other hand, who have yellow enough to support the character of fleshiness, may very well have yellowish draperies, to bring down the yellow of their tints, and make them look the fresher; and, near very high-colored and lively carnations, linen does wonders.

In *grounds*, two things are observable; the tone and the color. The color is to be considered in the same manner as those of draperies, with respect to the head. The tone must be always different from the mass it supports, and of which it is the ground, that the objects coming upon it may not seem transparent, but solid and raised. The color of the hair of the head usually determines the tone of the ground; and, when

the former is a bright chestnut, we are often embarrassed, unless helped by means of a curtain, or some accident of the *claro-obscuro*, supposed to be behind, or unless the ground is a sky. Where a ground is neither curtain nor landscape, but is plain like a wall, it ought to be very much party-colored, with almost imperceptible patches or stains; for, besides its being so in nature, the picture will look the more grand.

4. *Attitudes* ought to suit the ages and qualities of persons and their tempers. In old men and women they should be grave, majestic, and sometimes bold: and generally, in women, they ought to have a noble simplicity and modest cheerfulness: a charm infinitely beyond coquetry: and indeed coquettes themselves care not to be painted such. Attitudes are of two kinds: one in motion, the other at rest. Those at rest may suit every person: but those in motion are proper for young people only, and are hard to be expressed; because a great part of the hair and drapery must be moved by the air; motion, in painting, being never better expressed than by such agitations. The attitudes at rest must not appear so much so as to seem to represent an inactive person, and one who sits for no other purpose but to be a copy. And, though the figure that is represented be at rest, yet the painter, if he think fit, may give it a flying drapery, provided the scene or ground be not a chamber or close place.

It is above all things necessary that the figures which are not employed should appear to satisfy the spectator's curiosity; and for this purpose show themselves in such an action as suits their tempers and conditions, as if they would inform him what they really were. In a word, attitude is the language of portraits; and the skilful painter ought to give great attention to it. The best attitudes are such as induce the spectator to think that the sitter took a favorable opportunity of being seen to advantage, but yet without affectation. With regard to women's portraits, in whatever attitude they are placed, they should sway in such a manner as to give their face but little shade; and we should carefully examine whether the face appear more beautiful in a smiling or in a serious air.

According to De Piles, portraiture requires three different sittings and operations: viz. dead coloring, second-coloring, and retouching or finishing. Before the painter dead-color, he must attentively consider what aspect will best suit the sitter, by putting him in different positions, if he have not any settled design; when this is determined, it is of the utmost consequence to put the parts well together, by comparing always one part with another; for not only the portrait acquires a greater likeness when well designed, but it is troublesome to make alterations at the second sitting, when the artist should only think of painting, that is, of disposing and uniting his colors.

i. The dead-coloring ought to be clean, because of the slope and transparency of the colors, especially in the shades; and when the parts are well put together, and become clammy, they must be judiciously sweetened and melted in

each other; yet without taking away the air of the picture, that the painter may finish it, in proportion as he draws. But if fiery geniuses do not like this method of scumbling, let them only mark the parts slightly, and so far as is necessary for giving an air. In dead-coloring it is proper to put in rather too little than too much hair about the forehead; that, in finishing, we may be at liberty to place it where we please, and to paint it with all possible softness and delicacy. If, on the contrary, you sketch upon the forehead a lock which may appear to be of a good taste, and becoming the work, you may be puzzled in finishing it, and not find the life exactly in the same position as you would paint it.

ii. The business of the second sitting is to put the colors well in their places, and to paint them in a manner that is suitable to the sitter and to the effect we propose; but, before they are made clammy, we ought to examine afresh whether the parts are rightly placed, and here and there to give some touches towards likeness, that, when we are assured of it, the work may go on with greater satisfaction. If the portrait be justly designed, the painter ought, as much as possible, to work quick, as the work will thus have the more spirit and life. But this readiness is only the effect of long study and experience.

iii. Before we retouch or finish, it is proper to terminate the hair, that, on finishing the carnations, we may be able to judge of the effect of the whole head. If, at the second sitting, we cannot do all we intended, which often happens, the third makes up the loss, and gives both spirit, physiognomy, and character. If we would paint a portrait at once, we must load the coloring; but neither sweeten nor drive, nor very much oil it; and, if we dip the pencil in varnish as the work advances, this will readily enable us to put color on color, and to mix them without driving. There is nothing so rare as fine hands, either in the design or coloring. It is, therefore, convenient to cultivate a friendship with some women, who will take pleasure in serving for a copy. But if an opportunity occurs of copying hands after Vandyck, it must not be let slip; for he drew them with a surprising delicacy and an admirable coloring. It is of great service to copy after the manners which come nearest to nature; as are those of Titian and Vandyck.

Before we begin coloring, we must catch the very first moments, which are commonly the most agreeable and most advantageous, and to keep them in our memory for use when we are finishing; for the sitter, growing tired with being long in the same place, loses those spirits which, at his first sitting down, gave beauty to the parts, and conveyed to the tint more lively blood, and a fresher color. In short, we must join to truth a probable and advantageous possibility, which, far from abating likeness, serves rather to set it off. For this end, we ought to begin with observing the ground of a tint, as well what it is in lights as in shades; for the shades are only beautiful as they are proportioned to the light. We must observe, if the tint be very lively, whether it partake of yellowness, and where that yellowness is placed; because usually, towards the

end of the sitting, fatigue diffuses a general yellowness, which makes us forget what parts were of this color, and what were not, unless we had taken due notice of it before. For this reason, at the second sitting, the colors must be every where readily clapped in, and such as appear at the first sitting down; for these are always the finest. The surest way to judge of colors, is by comparison; and, to know a tint, nothing is better than to compare it with linen placed next it, or else placed next to the natural object if there is occasion. The portrait being now finished, nothing remains, but, at some distance of time, to view both the picture and sitter together, to determine with certainty, whether there is any thing still wanting to the work.

Of theatrical decorations, &c.—Theatrical decorations require a particular art which unites several of the general parts of painting with the knowledge of architecture, perspective, &c. They who apply themselves to it would do well to design their decorations by day, and to color them by candle light, as they will be much better able to judge of the effect of a painting intended to be viewed by that light.

The designs for furniture, carriages, porcelain, and other branches of manufacture, form also a very important article of painting in general, and of academy painting in particular. This is a distinct branch of the art; and without doubt not the least useful, as it contributes so essentially to the success of manufactures, and consequently to the prosperity of a state; and it is an art to which it were much to be wished that youth of ability and invention would apply themselves. See JAPANING and PORCELAIN.

These may be deemed the chief principles of the art of painting, which it behoves the student indispensably to acquire not only the knowledge but likewise the practice of. There are also others, which must not by any means be overlooked, and among these are to be enumerated—disposition, costume, and illusion. This latter quality cannot, perhaps, in its strictest sense, be attained by painting: there is, however, a species of it (although probably the name is not fairly applied) which demands the greatest attention, and forms one of the chief fascinations of the art. It is this: that the painting shall resemble truth to such an extent, by the justness of its forms, the combination of its colors, and all its general effects, that the image thereby presented shall afford all the gratification resulting from the imitation of reality. This, it is admitted, is not illusion in the stricter sense of the word; for it exists as well in pictures on a small scale as in those of equal dimensions with the thing represented: but it is that exactness of imitation of which painting is susceptible, even in pictures which comprise any number of figures at a reasonable distance from each other.

We shall now proceed to illustrate the theoretical part of our subject by a few practical observations.

And, first:—Let us warn the young artist against being led astray by the ambition of composing facilely, or acquiring that which is termed a masterly handling of the chalk or pencil. To this mistaken aim, however, young men are incited in various ways. There is something dash-

ing and fine about the notion in the first place; and in the next they are tempted to it by that slothful feeling too natural to us all. They are terrified at the prospect of the toil required to obtain exactness; not considering that the lives of all those painters who attained eminence furnish instances and recommendations of unceasing industry and application. When these great masters imagined a subject, they first executed a variety of sketches; afterwards a finished drawing of the whole; after that a more correct drawing of every separate part:—they then painted the picture, and concluded the whole by retouching it from the life. At the same time a student is not always advancing because he is employed; he must exert his strength in those parts of the art where the real difficulties lie; in those parts which distinguish it as a liberal art, and not in such as may be resolved into the merely ornamental.

It is, secondly, a matter of considerable importance, that those drawings on which the young artist first exercises his ability, should be of the very best kind; that the profiles, the hands, the feet, &c., given him to copy be of the first masters, in order that both his eye and his hand may become early acquainted with the most exquisite proportions and the most charming shapes.

Thirdly, It would be desirable that the student should copy some of the fine heads to be met with on Greek and Roman medals: he will hence become acquainted (if we may be allowed the phrase) with the personages whom he may in course of time transplant into his pictures; and, above all, improve himself in the important art of copying from relief. Hence, also, he will become initiated into the doctrine of light and shade, and the nature of that *chiaro-scuro* by which the different forms of things may, justly speaking, be said to be distinguished.

The chief divisions of the art of painting are into historical (comprising mystical and allegorical), grotesque, portrait, fancy, animals, fruits and flowers, battles, landscapes, sea views, still life, and architecture.

Grotesque paintings are to be found in the celebrated loggia of the Vatican palace at Rome, painted from the designs of Raffaele, and on the ceiling of the portico of the capitol, carved from those of Michel Angiolo.

The other departments are sufficiently explained by their respective names: it may be as well, however, to observe, that the term still life refers to all inanimate objects, and chiefly to household furniture, instruments of use, &c.

SECT. II.—MODES AND MATERIALS OF PAINTING.

The different methods of painting at present practised are—

Oil painting, which is preferable to any other mode, since it allows a complete gradation of tints, in the most enduring of all materials, except those of mosaic.

Fresco is performed with colors diluted in water, and laid on a wall newly plastered, with which they incorporate, becoming often as durable as the stucco itself. See the following section.

Crayons, in which colors, either simple or compound, are ground in water, mixed with gum, and made into small rolls of a hard paste, which are then used on paper or parchment.

Miniature, consisting of colors prepared with water or gum, and laid on vellum or ivory. A smaller kind of portrait.

Enamel, performed on copper or gold, with mineral colors dried by fire. This method is likewise extremely durable. See ENAMEL.

Encaustic, executed by the mixture of wax with the varnish and colors. See ENCAUSTIC.

Water colors, more properly denominated limning. This is performed with colors mixed with water, gum, size, or paste, on silk, paper, and sundry other materials.

Besides these various methods we may add the painting in distemper; namely, with colors mixed with size, white of eggs, or any thin glutinous substance, and used on paper, linen, silk, board, or wall. There are also painting on GLASS (which word see), and clydoaic painting, consisting of a mixed use of oil-colors and water.

The various pigments at present in use, and fitted for the general purposes of oil painting, are:—Cremnitz white, white lead of different sorts; a fine yellow, recently discovered from chromate of iron; king's yellow or orpiment; patent yellow, Naples' yellow, ochres, Dutch pink, terra di Sienna, yellow lake, red lead, vermilion, red ochre, Indian red, Venetian red, lakes of various kinds, brown pink, Vandyck's brown, umber, burnt and unburnt; terra di Sienna, burnt; Prussian and Antwerp blue, ultra marine, ivory black, blue black, asphaltum. These may be reckoned the chief colors for the palette; there are, however, several others, which are employed for particular purposes, such as verdigris, &c.

The oils best adapted to the ends of painting are poppy, nut, and linseed oils; and in this climate a preparation of the latter, by boiling it with some siccative, is in common use. See OIL.

We will subjoin two or three observations, made by a quaint old writer on art (Richardson), with respect to the method of distinguishing a genuine picture of one of the old masters from a copy:—“There are some pictures and drawings which are seen to be originals, though the hand and manner of thinking are neither of them known; and that by the spirit and freedom of them; which sometimes appears to such a degree as to assure us it is impossible they should be copies. But we cannot say, on the contrary, when we see a tame, heavy handling, that it is not original merely upon that account, because there have been many bad originals, and some good masters have fallen into a feebleness of hand, especially in their old age. The best counterfeit hands can rarely do it so well as to deceive a good connoisseur; the handling, the coloring, the drawing the airs of heads, some, nay, all of these discover the author; more or less easily, however, as the manner of the master happens to be: what is highly finished, for example, is more easily imitated than what is loose and free. Copies made by a master after his own work are discoverable by being well ac-

quainted with what that master did when he followed nature; these shall have a spirit, a freedom, a naturalness which even he cannot put into what he copies from his own work. To conclude, there is one qualification absolutely necessary to him that would know hands, and distinguish copies from originals; as it also is to any one who would judge well of the goodness of a picture or drawing; or indeed of any thing else whatsoever; and that is—he must know how, and accustom himself, to take in, retain, and manage, clear and distinct ideas.

SECT. III.—OF PAINTING IN FRESCO.

Of all kinds of painting, fresco is the most durable, the most speedily executed, and the most proper to adorn great buildings. It appears, that most of the fragments of ancient painting handed down to us by the Romans are in fresco. Norden, quoted by Winckelman, speaks of the ruins of Egyptian palaces and temples, in which are Colossian paintings on walls eighty feet high. The description which those authors have given of these paintings, of the prepared ground, and of the manner in which the colors have been employed, &c., shows plainly that they have been thus executed. The stability of fresco is demonstrated, therefore, by the existence of these fragments of the highest antiquity. There are no other kinds of painting which could equally have resisted the injuries of the weather, the excessive aridity of certain elements, the moisture of subterraneous situations, and the destructions by barbarians.

In making paintings in fresco, the choice of place, when they are without doors, is of the greatest importance. In countries where there is little or no frost, an exposure to the north is the most favorable; and in cold climates a western exposure should be made choice of, because the first rays of the rising sun have a very pernicious effect after frost.

The choice of materials is the next thing of importance. To make it durable, the ground is the object of chief attention; and, to make this perfect, the mortar used by the ancients, now unknown, would be necessary. It is easy to perceive that a minute detail of forms, an extensive mixture and gradation of tints, and the merit of a delicate and gentle touch, can make no part of the excellencies of this kind of painting. It cannot bear a close examination like a picture in oil. There is always something dry and rough which displeases. An artist who would flatter himself with success in a fresco placed near the eye would be grossly deceived; a common spectator would find it coarse and badly finished.

Fresco is chiefly employed in palaces, temples, and public edifices. In these vast places no kind of painting can be preferred to it; large, vivid in its strokes, and constantly fresh, it enriches the architecture, animates it, and gives relief to the eye from the repetition of the same forms, and the monotony of color, in a place where colored marbles and bronzes are not employed. A fine fresco gives the greatest effect to a lofty building, which serves as a frame and support to this enchanting art, which fixes the

attention of every person of sensibility and taste. Fresco has a freshness, splendor, and vigor, not to be found in oil or water colors.

A known principle in all painting is, that the coloring is more perfect in proportion as it approaches to the lights and shades in nature. As colors applied to any subject can never reach this degree of perfection, the illusion which painters produce consists in the comparison and opposition of the tones of colors among themselves.

If the white of the finest and purest oil appears heavy and gray, compared with great lights in natural whites, it follows, that, in order to copy them with fidelity, the tones which follow the first white must be degraded in an exact proportion. Thus it is necessary that the shades of a picture be considerably deeper than those of the model; especially, if, from the greatest lights to the browns, one hath proportionably followed the distance which is found between the colors on the pallet and the tones of the object copied. Now, if the white of fresco be infinitely more bright than that of oil, the same effect will be obtained in a brown tone. On the other side if it constantly happens that the brown tones of fresco are much more vigorous than those of water colors, and equal even to the browns of oil itself, it is certain that it possesses a splendor and vigor more extensive than any other kind of painting. Thus, in the hands of an artist who is well acquainted with the colors fit for fresco, it is more susceptible of the general effect, and more capable than any other kind of giving projection and the semblance of life to the figures.

If we enquire why painting in fresco is now seldom or never practised, we may ascribe it to the great talents required to execute it. 'Many of our painters,' says Vasari, 'excel in oil and water colors, and yet fail in fresco; because of all kinds this requires the greatest strength of genius, boldness in the strokes, and resolution.' If in an age abounding in great masters it was difficult to excel in this kind, it must be much more so in ours; but we should not require the characters of sublimity and style to which men were accustomed in the time of Vasari.

We should execute in fresco as we do in oils; for Italy herself along with Michel Angiolo, and Zuicharo, had Cortonni Giardano and Francischini as middling fresco-painters. And in France, Lafosse, Bon Bologne, and Perur, performed several works in fresco, which might be imitated by the painters of our times. But the real causes for abandoning this art proceed from the want of knowledge and taste in the persons who employ the artists, and from the manners of the age. As a pleasant or licentious conceit, unfinished coloring, and bold effects of shade, are the chief objects of consideration, a very smooth painting, enlivened by gentle touches, completely gratifies the person who pays the price; and therefore the philosophical principles of the art, which require study, are not cultivated.

The mechanical process of this useful and beautiful kind of painting is as follows: before painting it is necessary to apply two layers. If the wall on which you are to paint is of brick,

the layer is easily applied; but if it is of free-stone closely united, it is necessary to make excavations in the stone, and to drive into them nails or pegs of wood in order to hold the first layer. The first layer is made of good lime and a cement of pounded brick, or, which is still better, river sand; this latter forms a layer more uneven, and better fitted to retain the second smooth and polished layer applied to its surface. There should be experiments to discover a layer still more compact, and more independent of the variations of the air; such, for example, as covers the aqueducts and ancient reservoirs constructed by the Romans in the neighbourhood of Naples.

Before applying the second layer, or what you are to paint, it is necessary that the first be perfectly dry; for there issues from the lime, when it is moist, a smell both disagreeable and pernicious to the artist. When the first layer is perfectly dry, it is wet with water in proportion to its dryness, that the second layer may the more easily incorporate with it. The second layer is composed of lime, slaked, and long exposed in the air, and of river sand, of an equal grain, and moderately fine. It requires an active and intelligent mason to apply this layer, as the surface must be altogether equal. The operation is performed with a trowel; and the operator requires to have a small piece of wood to take away the large grains of sand, which, remaining, might render the surface uneven. To give a fine polish to this layer, one ought to take a sheet of paper, apply it to the wall, and pass and repass the trowel over the paper. By these means the little inequalities which hurt the exactness of the stroke, and which produce false appearances at a distance, are entirely smoothed. The artist must not lay more than the painter can finish in a day, as this kind of painting must be executed on a fresh ground.

The layer being thus prepared, the painter begins his operation; but as painting in fresco must be executed rapidly, and as there is no time to retouch any of the strokes, the painter takes care to provide himself with large cartoons, on which he has drawn, with exactness, and in their full size, the figures which he is to paint, which leaves him nothing to do but to copy them on the wall.

The cartoons are composed of several sheets of large paper pasted one on another, neither too thick nor too slender. The painter traces the tracks of the figures on the plaster by passing a steel point over the tracks in the cartoons, or in pricking them. Having thus attained an exact and speedy drawing, it now remains to execute the painting. But it is essential, when one wishes to finish any small work of this kind, in the first place, to be informed of the proper colors, and of those which cannot be used.

In general, the colors extracted from earthen, and those which have passed through the fire, are the only ones which can be employed in this kind of painting. The colors are white, made of lime, the white of egg-shells, ultramarine, the black of charcoal, yellow ochre, burnt vitriol, red earth, green of Verona, Venetian black, and burnt ochre.

There are others which require to be used with great precaution, such as enamel blue, cinnabar, and white marble dust. When enamel blue is used, it requires to be applied instantaneously, and when the lime is very moist, otherwise it does not incorporate with the plaster; and, if one retouch with this color, it must be done an hour or more after the first application, to increase its lustre. With regard to the white marble dust, it is apt to turn black if it be not mixed up with a proper quantity of white lime.

Cinnabar, which has a splendor almost superior to all other colors, loses it almost entirely when mixed with lime. At the same time it may be employed in places not exposed to the air, with a little degree of care in the preparation. Reduce a quantity of the purest cinnabar to powder, put it into an earthen vessel, and pour lime-water on it for two or three times. By this process the cinnabar receives some impression of lime-water, which makes it capable of being employed in fresco-painting.

One of the best colors, and the one most used in fresco for the gradation of tints, and for giving the requisite tone, is white of lime. This white is prepared by mixing lime slaked long before with good water. The lime deposits a sediment at the bottom of the vessel; when the water is poured off, this sediment is the white of lime.

Another kind of white might be used, the effects of which would be known by experience, namely, the white of egg-shells. To prepare this white, one must take a great quantity of shells of eggs, which must be pounded and boiled in water along with a quantity of quick lime; after this, they are put into a strainer, and washed repeatedly with fountain water. The shells are again pounded until the water employed for that purpose becomes pure and limpid; and, when they are in this manner reduced to powder, this powder is grinded in water, and formed into small pieces, and dried in the sun.

All the different kinds of ochres make excellent colors for fresco, and take different shades, being previously burned in iron chests. With regard to the Naples yellow, it is dangerous to use it where the painting is much exposed to the air. The blacks of charcoal, of peach stones, and of vine twigs, are good; but that extracted from bones is of no value.

Roman vitriol gathered at the furnaces, and called burnt vitriol, ground afterwards in spirit of wine, resists the air extremely well when employed in lime. There is also a red extracted from this preparation somewhat like that produced from lac. This color is very proper for preparing the layers to be colored with cinnabar; and the draperies painted with these two colors will vie in splendor with those painted with fine lac in oil.

The ultramarine is the most faithful color; and it not only never changes, but it communicates this precious quality to those colors with which it is mixed.

The manner of employing these colors is to grind them in water, and to begin by arranging them into the principal tints to be employed; these are afterwards put into pots; and it is necessary to use many pallets raised at the edges

to form the intermediate shades, and to have under one's eye all the shades required. As all the tints, except burnt ochre, violet, red, and blacks of all kinds, are apt to become clear, the painter must have beside him some pieces of brick or new tile very dry. A dash of the colors is applied to one of these with the pencil, before using them; and, as tile instantaneously imbibes the water, one perceives what the shade will be after the fresco is dry.

SECT. IV.—OF PAINTING WITH CRAYONS.

The student must provide himself with strong blue paper, the thicker the better, if the grain is not too coarse. The knots should be levelled with a penknife or razor, otherwise they will prove exceedingly troublesome. The paper must be pasted very smooth on a linen cloth, previously strained on a deal frame, the size according to the artist's pleasure; on this the picture is to be executed; but it is most eligible not to paste the paper on till the whole subject is first dead-colored. The method of doing this is by laying the paper, with the dead-color on its face, upon a smooth board, when, by a brush, the back side of the paper must be covered with paste; the frame with the strained cloth must then be laid on the pasted side of the paper; after which, turn the painted side uppermost, and lay a piece of clean paper upon it, to prevent smearing it: this being done, it may be stroked gently over with the hand; by which means all the air between the cloth and the paper will be forced out.

When the painters want to make a very correct picture, they generally use tiffany or black gauze, strained tight on a frame, which they lay flat on the subject to be imitated, and with a piece of chalk, trace all the outlines on the tiffany. They then lay the canvas to be painted on, flat upon the floor, placing the tiffany with the chalked lines upon it, and with a handkerchief brush the whole over; this presents the exact outlines of the picture on the canvas. The crayon-painter may also use this method when the subject of his imitation is in oils; but, in copying a crayon picture, he must have recourse to the following method, on account of the glass.

The picture being placed on the easel, let the outlines be drawn on the glass with a small camel's hair pencil, dipped in lake, ground thin with oils, with great exactness. After this, take a sheet of paper of the same size, and place it on the glass, stroking over all the lines with the hand, by which means the color will adhere to the paper, which must be pierced with pin-holes pretty close to each other. The paper intended to be used for the painting must next be laid upon a table, and the pierced paper placed upon it; then, with some fine pounded charcoal tied up in a piece of lawn, rub over the pierced lines, which will give an exact outline; but great care must be taken not to brush this off till the whole is drawn over with sketching chalk, which is a composition made of whiting and tobacco-pipe clay, rolled like the crayons, and pointed at each end. When a student paints from the life, it is proper to make a correct drawing of the outlines on another paper, the size of the picture he is going to

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paint, which he may trace by the preceding method.

The student will find the sitting posture, with the box of crayons in his lap, the most convenient in which to paint. The part of the picture he is painting should be rather below his face, else the arm will be fatigued. Let the windows of the room be darkened, at least to the height of six feet from the ground; and the subject to be painted should be placed so that the light may fall with every advantage on the face.

The features being correctly drawn with chalks, take a crayon of pure carmine, and carefully draw the nostril and edge of the nose next the shadow; then, with the faintest carmine teint, lay in the highest light upon the nose and forehead, which must be executed broad. Then proceed gradually with the second teint, and the succeeding ones, till he arrives at the shadows, which must be enriched with much lake, carmine, and deep green. The several pearly teints discernible in fine complexions must be imitated with blue verditer and white, which answers to the ultramarine teints used in oils. But, if the parts of the face where these teints appear are in shadow, the crayons composed of black and white must be substituted in their place.

Let the student be careful when he begins the eyes, to draw them with a crayon inclined to the carmine teint, of whatever color the irises are; he must lay them in brilliant, and at first not loaded with color, but executed lightly. The student must let the light of the eye incline very much to the blue cast, avoiding a staring white appearance, but preserving a broad shadow thrown on its upper part by the eye-lash.

The student should begin the lips with pure carmine and lake, and in the shadow use some carmine and black; the strong vermilion teints should be laid on afterwards. He must form the corner of the mouth with carmine, brown ochre, and greens, variously intermixed. If the hair is dark, he should preserve much of the lake and deep carmine teints therein.

After he has dead-colored the head, he is to sweeten the whole together, by rubbing it over with his finger, beginning at the strongest light upon the forehead, passing his finger very lightly, and uniting it with the next teint, which he must continue till the whole is sweetened together, often wiping his finger on a towel, to prevent the colors being sullied. When the head is brought to some degree of forwardness, let the back ground be laid in, which must be done by covering it as thin as possible, and rubbing it into the paper with a leathern stump. Near the face the paper should be almost free from color. The ground, being painted thin next the hair, affords an opportunity of painting the edges of the hair over in a light and free manner in finishing.

The above method, properly executed, produces the appearance of a painting composed of three colors, viz. carmine, black, and white, which is the best preparation a painter can make for the producing a fine crayon picture. The next step is, to complete the back ground and the hair; thence proceed to the forehead, finishing downward.

In painting over the forehead the last time, begin the highest light with the most faint vermilion teint, in the same place where the faint carmine was first laid, keeping it broad in the same manner. In the next shade, the student must work in some light blue teints, composed of verditer and white, intermixing with them some of the deeper vermilion teints, insensibly melting them into one another. Some brilliant yellows may also be used, and, towards the roots of the hair, strong verditer teints, intermixed with green, will be of singular service. Cooling crayons, composed of black and white, should succeed these, and melt into the hair. Beneath the eyes, the sweet pearly teints are to be preserved, composed of verditer and white, and under the nose, and on the temples, the same may be used; beneath the lips, teints of this kind also are proper, mixing them with the light greens and some vermilion. In finishing the cheeks, let the pure lake clear them from any dust contracted from the other crayons; then with the lake may be intermixed the bright vermilion; and, last of all, a few touches of the orange-colored crayon, but with caution.

The eye is the most difficult feature to execute in crayons, as every part must be expressed with the utmost nicety, to appear finished; at the same time that the painter must preserve its breadth and solidity while he is particularising the parts. To accomplish this, the student should use his crayon in sweetening as much, and his finger as little as possible. When he wants a point to touch a small part with, he may break off a little of his crayon against the box, which will produce a corner fit to work with in the minutest parts. When the eye-balls are sufficiently prepared, the shining speck must be made with a pure white crayon, which should be first broken to a point, and then laid on firm; but, as it is possible they may be defective in neatness, they should be corrected with a pin, taking off the redundant parts, by which means they may be formed as neat as can be required.

The difficulty, with respect to the nose, is to preserve the lines properly determined, and at the same time so artfully blended into the cheek as to express its projection, and yet no real line to be perceptible upon a close examination; in some circumstances it should be quite blended with the cheek, which appears behind it, and determined entirely with a slight touch of red chalk. The shadow caused by the nose is generally the darkest in the whole face. Carmine and brown ochre, carmine and black, and such brilliant crayons, compose it best.

The student having prepared the lips with the strongest lake and carmine, &c., must with these colors make them completely correct; and, when finishing, introduce the strong vermilions, but with caution. This, if properly touched, will give the lips an appearance equal if not superior to those executed in oils, notwithstanding the seeming superiority the latter has, by means of glazing, of which the other is entirely destitute.

When the student paints the neck, he should avoid expressing the muscles too strong in the stem; nor should the bones appear too evident

on the chest. The most necessary part to be expressed is a strong marking just above the place where the collar bones unite; and, if the head is much thrown over the shoulders, some notice should be taken of the large muscle that rises from behind the ear, and is inserted into the pit between the collar bones. All inferior muscles should be avoided. In coloring the neck, let the student preserve the stem of a pearly hue, and the light not so strong as on the chest. If any part of the breast appears, its transparency must also be expressed by pearly teints; but the upper part of the chest should be colored with beautiful vermilions delicately blended with the other.

Dark blue, purple, black, pink, and all kinds of red draperies also should be first tinged with carmine, which will render the colors much more brilliant than any other method; over this should be laid on the paper the middle teint, except the dark masses of shadow, which should be laid on at first as deep as possible; these, sweetened with the finger, will exhibit a masterly breadth, which the lesser folds, when added, ought by no means to destroy. With the light and dark teints, the smaller parts are next to be made with freedom, executing as much with the crayon, and as little with the finger as possible; in each fold touching the last stroke with the crayon, which stroke the finger must never touch. In the case of reflections, the simple touch of the crayon will be too harsh, therefore fingering will be necessary afterwards, as reflected lights are always more gentle than those which are direct. With respect to reflections in general they must always partake of the same color as the object reflecting, but in the case of single figures, it may be useful to make some particular observations. In a blue drapery, let the reflections be of a greenish cast; in green draperies, make them of a yellow teint; in yellow, of an orange; in orange, reflect a reddish cast; in all reds, something of their own nature, but inclined to the yellow: black should have a reddish reflection; the reflection of a reddish teint will also present purples to the best advantage. Of whatever color the drapery is, the reflection on the face must partake thereof, otherwise the picture, like paintings on glass, will have but a gaudy effect. Linen, lace, fur, &c., should be touched spiritedly with the crayon, fingering very little except the latter; and the last touches even of this, like all other parts, should be executed by the crayon, without sweetening with the finger.

The methods above recommended have been practised by the most celebrated crayon-painters, whose works have been held in public estimation; but the knowledge of, and ability to execute each separate part with brilliancy and truth, will be found very insufficient to constitute a complete painter, unless he unite them with each other by correctness of drawing, propriety of light and shadow, and harmony of coloring. To accomplish this, the student should carefully avoid finishing one part, till he has properly considered the connexion it is to have with the rest.

MATERIALS.—The perfection of the crayons consists, in a great measure, in their softness; for it is impossible to execute a brilliant picture with

them if they are otherwise; on which account great care should be observed in the preparing them, to prevent their being hard. In all compositions flake white and white lead should be wholly rejected, because the slightest touch with either of these will unavoidably turn black. They are subject to change; but, whenever this happens, it is entirely owing to an injudicious use of the above mentioned whites, which will stand only in oils. To obviate the bad effect of such crayons use common whiting, prepared as follows:—

Take a large vessel of water, put the whiting into it, and mix them well: let this stand about half a minute, then pour off the top into another vessel, and throw the gritty sediment away; let what is prepared rest about a minute, and then pour it off as before, which will purify the whiting. When this is done let the whiting settle, pour the water from it, after which lay it on the chalk to dry, and keep it for use, either for white crayons, or for preparing teints with other colors, for with this all other teints may be safely prepared. All colors of a heavy or gritty nature, especially blue verditer, must be purified by washing after this method.

The student must have a large flexible pallet-knife, a large stone and muller to levigate the colors, two or three large pieces of chalk to absorb the moisture from the colors after they are levigated, a piece of flat glass to prevent the moisture from being absorbed too much, till the colors are rolled into form, and vessels for water spirits, &c., as necessity and convenience shall direct.

I. REDS. Good carmine is inclined to the vermilion tint, and good lake to the carmine tint. The carmine crayons are thus prepared:—

1. *Carmine*. As their texture is inclinable to hardness, instead of grinding and rolling them take a sufficient quantity of carmine, lay it upon the grinding stone, mix it with a levigating knife with spirit of wine till it becomes smooth and even. The chalk-stone being ready, lay the color upon it to absorb the spirit, but be careful that it is laid on in a proper shape for painting. If it is levigated too thin the crayons will be too flat; and if too thick it will occasion a waste of color by their adhering to the pallet-knife. The next step is to compose the different teints by a mixture with whiting; the proportion consists of twenty gradations to one. Take some of the simple color, and levigate it with spirit of wine, adding about one part of washed whiting to three parts of carmine, of which, when properly incorporated, make two parcels. The next gradation should be composed of equal quantities of carmine and whiting, of which four crayons may be made. The third composition should have one-fourth carmine and three-fourths whiting; of this make six crayons, which will be a good proportion with the rest. The last tint should be made of whiting very faintly tinged with carmine, of which make about eight crayons which will complete the above mentioned proportion.

2. *Lake* is a color very apt to be hard; to prevent which take about half the quantity of lake intended, and grind it very fine with spirit

of wine; let it dry, and then pulverise it, which is easily done if the lake is good: then take the other half, and grind it with spirits, after which mix it with the pulverised lake, and lay it out directly in crayons on the chalk. This color will not bear rolling. The simple color being thus prepared, proceed with the compound crayons as directed before, and in the same degrees of gradation as the carmine teints.

3. *Vermilion*. The best is inclined to the carmine tint. Nothing is required to prepare this color more than to mix it on the stone with soft water or spirits, after which it may be rolled into crayons. Various teints are produced by a mixture of the simple color with whiting.

II. *BLUES*. 1. Prussian blue is apt to bind, and is rendered soft with more difficulty than carmine and lake. The same method of preparation is to be followed with this as directed with respect to lake. 2. Blue verditer is naturally gritty, and therefore should be washed well. Its particles are so coarse as to require to be united by slaked plaster of Paris about the size of a pea. This blue is extremely brilliant, and will be of great use in heightening draperies, &c. The teints must be formed with whiting, as above directed.

III. *GREENS*. In Switzerland they have a method of making greens superior to ours. We usually take yellow ochre, grind it with spirits, mix it with the powder of Prussian blue, then temper it with a knife, and lay the crayons on the chalk, without rolling them. Instead of this some use king's yellow mixed with Prussian blue, and others brown ochre and Prussian blue. The crayons made of the two last may be rolled.

IV. *YELLOW*S. 1. King's yellow is the most useful and the most brilliant, levigated with spirits of wine. Yellow ochre, and Naples yellow, ground with spirits, make useful crayons. 2. Orange is produced with king's yellow and vermilion ground together with spirits, and the teints formed as in other cases, but no great quantity of them is required.

V. *BROWNS*. 1. Cullen's earth is a fine dark brown. After six or eight of the simple crayons are prepared, several rich compound teints may be produced from it, by a mixture with carmine in various degrees. Roman or brown ochre is an excellent color, either simple or compounded with carmine. Whiting tinged with either of these proves very serviceable in painting. 2. Umber may be treated in the same manner, only it is necessary to levigate it with spirit of wine.

VI. *PURPLES*. Prussian blue ground with spirits, and mixed with pulverised lake, will produce a good purple. Carmine, thus mixed with Prussian blue, will produce a purple something different from the former.

VII. *BLACK*. 1. Lamp-black is the only black that can be used with safety, as all others are subject to mildew; but, as good lamp-black is very scarce, the student should make it himself; the process is as follows:—Provide a tin cone, fix it over a lamp at such a height that the flame may just reach the cone for the soot to gather within it. When a sufficient quantity is collected take it out, and burn all the grease from it in a

crucible. It must then be ground with spirits, and laid on the chalk to absorb the moisture. 1. Various gray teints may be formed from this by a mixture of whitening. 2. Vermilion mixed with carmine is a composition of great use. 3. Carmine and black is another good compound, and various gradations should be made. 4. Vermilion and black is also a very useful compound. 5. Prussian blue and black is another good compound, and will be found of singular service in painting draperies.

The different compositions of colors must be cut into a proper magnitude, after they are prepared, to be rolled into pastils, for use. Each crayon should be formed in the left hand with the ball of the right, first formed cylindrically, and then tapered at each end. If the composition is too dry, dip the finger in water; if too wet, the composition must be laid upon the chalk again to absorb more of the moisture. The crayons should be rolled as quick as possible; and when finished must be laid upon the chalk again to absorb all remaining moisture.

SECT. V.—OF HOUSE PAINTING.

Painting, as applied to buildings, comprises in the first place the coloring over all the several kinds of wood, iron-work, &c., employed therein with mineral colors, rendered fluid by saturation with oils, oil of turpentine, &c. A pigment so prepared is spread over them with a brush, and by the repetition of several coats they together operate to their protection, and at the same time give a variety and neatness to the general appearance of a house. This kind of painting will be divided in this section under its several heads as it is practised in London, and will embrace the working in common colors, also graining of its several kinds, ornamental painting, inscription writing, &c. &c. All the prismatic colors are occasionally called into use by the painter, and he varies these to suit the taste of his employer into almost every gradation of teint. But the ground-work of all house-painting is formed by a paint prepared from lead, known in the arts as ceruse, or white-lead. This is manufactured for use at places called the White-lead Works, and is performed in the following manner, viz. by rolling leaden plates spirally up, so as to leave the space of about an inch between each coil, and afterwards placing them vertically in earthen pots, at the bottom of which is some good vinegar. The pots are then to be covered, and exposed for a length of time to a gentle heat in a sand bath, or by bedding them in hot dung. The vapor of the vinegar, assisted by the tendency of the lead to combine with the oxygen which is present, corrodes the lead, and converts the external portion of it into a white substance which comes off in flakes when the lead is uncoiled. The plates are thus treated repeatedly until they are corroded through, and completely reduced to an oxide; this is called ceruse or white lead. It is afterwards bleached, ground, and saturated with linseed oil. It is then put into tubs resembling butter firkins, each containing about 3 cwt.; in such tubs it is dispensed at the color shops. But at such places it is frequently adulterated with powdered chalk,

so that an experienced painter, who is desirous that his work should retain its color, prefers purchasing his lead at the works, where he is sure of having it pure. Lead improves by keeping, and all the best whites are performed by it when it is at least two or three years old. The Nottingham ceruse is most esteemed for house work when it is required to be finished in what is technically called flattening or dead white.

Litharge is employed by painters to render their colors more drying, and is composed of the ashes of lead, or a kind of dusky powder that first appears in its oxidation. When in this state it is called by the chemists a subcarbonate of lead, and is afterwards saturated with linseed oil to render it more drying.

Linseed oil is obtained by pressure from the seed of flax; it is afterwards filtered to clear it of any of the feculæ of the seed, and then suffered to remain in tubs to precipitate and clarify. The more colorless the oil is the better, and this is greatly promoted by keeping, as linseed oil will, by being kept a year or two, deposit all its coloring particles, and be as transparent as water: the best painting is made with oil in this state. In Holland they whiten their linseed oil by a very simple process, which is said by them to answer every purpose to be derived from its age. They take an earthen pot well glazed, into which they put one-third of fine white sand and one-third of water with the linseed oil they wish to whiten; and after having covered the vessel with glass they expose it to the sun, taking care to stir it at least once a day. When the oil has become very white it is left at rest during two days, after which it is taken away for use.

Of drying oils.—The substances most usually employed to produce them are the oxide of lead called litharge, plaster, and umber. The process consists in taking of these several materials in the proportions as follow, viz. to one pound of oil add half an ounce of litharge with as much ceruse, umber, and plaster. The oil is boiled on these four drugs over a gentle fire, taking care to skim it from time to time; this matter so skimmed off is called by the house-painter smudge, or dryer; it is of a lead color, and is used by him in his outside work, and sometimes mixed in the dark colors to render them more susceptible of fixing and drying. As soon as this scum begins to rarify and become red, the fire is stopped, and the oil being left at rest gradually settles and clarifies. Linseed oil so prepared is vended at the color shops under the name of boiled oil. All the best house-painting is done with it.

Mr. Vanherman has lately laid before the Society of Arts a method of rendering fish-oil applicable to painting; and it appears to make a good and cheap vehicle for colors exposed to the weather, though it dries but slowly. To thirty-two gallons of vinegar he adds twelve pounds of litharge and twelve pounds of sulphate of zinc, shaking the mixture well twice a day for a week. The mixture is then put into a tun of fish-oil, with which it is well shaken and mixed, and the next day the clearer part, about seven-eighths of the whole, is poured off. Twelve gallons of linseed oil, and two of oil of turpen-

tine are then added to the clear part, and this being well shaken together is left to settle for two or three days, when it will be fit to grind white lead and all fine colors in: these, however, are to be thinned for use with linseed oil and oil of turpentine. For cheap paints exposed to the weather, whitening and road dirt finely sifted are to be mixed with lime water to the consistence of mortar. To this composition may be added almost any pigment ground with the sediment of the prepared oil, in the proportion of one part to two of the lime water already used, and the whole is to be thinned for use, by adding to every eight pounds a quart of linseed oil and as much of a mixture of the prepared oil with lime water. The proportions of the mixture are not mentioned. If two ounces of litharge be added to a gallon of linseed oil and well shaken every day for a fortnight, and the clearer part mixed with half a pint of oil of turpentine be exposed to the sun for two or three days in shallow pans, Mr. Vanherman says 'it will be as white as nut oil.' If half a pound of frankincense be dissolved in a quart of oil of turpentine and added to a gallon of this bleached oil, and white lead ground in oil of turpentine be thinned for use with the mixture, he asserts that it will be quite dry and void of smell in four hours.

Oil of turpentine, or, as it is called, turps, is in general use among us in house-painting, and is the ingredient by which the flattening, as it is termed, is performed. All the larch and fir trees furnish a resin known by the general name of turpentine. Commerce distinguishes several qualities according to its degree of goodness. The larch tree furnishes what is called Venice turpentine; it is obtained by being made to flow from the trunk of the tree through holes made with an auger in which small pipes are fixed, that conduct the juice into buckets placed to receive it. This turpentine has a yellowish and limpid color, a strong aromatic smell, and bitter taste. In Canada the peasants collect it from the fir tree by perforating the sacs which contain it under the bark, with the point of a horn which is filled with this juice. It is afterwards distilled, in which it liberates an oil more or less volatile, according to the degree of heat employed. When the operation is done by a bath, a white, limpid, and odoriferous oil is obtained, which is called essence of turpentine. The residue from this distillation forms the boiled turpentine of commerce. This is sold at the color shops in the same way in which oil is, viz. by the gallon. This as well as the oil considerably improves by age.

Of the colors.—The colors used by painters may be classed as follows:—

| | | |
|-----|---|--|
| Red | Vermilion, Native cinnabar, Red-lead, Scarlet-ochre, Common Indian red, Spanish brown, Terra di Sienna, burnt, Carmine, Lake, Rose-pink, Red-ochre, Venetian-red | Color red, tending to orange. |
| | | Color crim- son tending to purple. |

| | |
|--------|--|
| Blue | Ultramarine, Ditto, ashes, Prussian-blue, Verditer, Indigo, Smalt. |
| | King's-yellow, Naples ditto, Yellow-ochre, Dutch-pink, English ditto, |
| Yellow | Light pink, Gamboe, Masticot, Common orpiment, Gall-stone, Terra di Sienna. |
| | Verdigris, Crystals of ditto, |
| Green | Prussian green, Terra verte, Sap-green. |
| | Orange-lake. |
| Orange | True Indian red, Archil, Logwood wash. |
| | Brown-pink, Bistre, Brown-ochre, Umbre, Cologne earth, Asphaltum. |
| Brown. | White-flake, White-lead, Calcined hartshorn, |
| | Pearl white, Troy white, Eggshell white, Flowers of bismuth. |
| White. | Lamp-black, Ivory ditto, Blue ditto. |
| | |

These embrace almost the whole of the colors employed by the house-painter, and which by experience he is enabled to mix in proportions to effect almost every tint.

Vermilion is a bright scarlet pigment, and is formed of common sulphur and quicksilver prepared for use by a chemical process. The best vermilion comes from China, where it is said the secret of making it is alone known. The Dutch pretend to have obtained it, and much of the vermilion at the shops is of their manufacture. It is so dear that the painters have recourse to every expedient to avoid using it: hence it is that the true Chinese pigment of this color is seldom seen.

Cinnabar is a similar pigment, differing only from vermilion by a more crimson coloring.

Red-lead, or minium, is lead calcined till it acquire a proper degree of color by exposing it with a large surface to the fire.

Scarlet-ochre is an earth with a base of green vitriol, and is separated from the acid of the vitriol by calcination.

Common Indian red is of a hue verging to scarlet, and is imported from the East Indies.

Venetian-red is a native ochre rather inclining

to scarlet; this is the pigment which is selected for the graining, as it is called by the house-painters, of doors, &c., in imitation of mahogany.

Spanish-brown is a native earth, found in the state and of the color in which it is used.

Terra di Sienna is a native ochre, and is brought from Italy in that state in which it is generally found. It is yellow originally, and in this state it is often made use of, and is accordingly placed among the yellow colors. It changes to an orange red by calcination, though not of a very bright tint, for which property it is sought to produce a pigment of that color.

Carmine is a bright crimson color, and is formed of the tinging substance of cochineal with nitric acid. It is not well calculated to mix up with oil, as its color changes rapidly by exposure to the air and light.

Lake is a white earthy body, as cuttle fish-bone, the basis of alum or chalk tinged with some vegetable dye, such as is obtained from cochineal or Brasil wood, taken up by an alkali and precipitated on the earth by the addition of an acid.

Rose-pink is a lake like the former, except that the earth or basis of the pigment is principally chalk, and the tinging substance is extracted from Brasil or Campeachy wood.

Red-ochre is a native earth, but that which is in common use is colored red by calcination, being yellow when dug out of the earth, and the same with the yellow ochre commonly used. This latter substance is chiefly brought from Oxfordshire, where it is found in great abundance.

Ultramarine is a preparation of calcined lapis lazuli, which is, when perfect, of a brilliant blue color, of an extremely beautiful and transparent effect in oil, and will retain this property with whatever vehicle or pigment it may be mixed. It is excessively dear, and is frequently sold at the color shops in an adulterated state.

Ultramarine ashes are the residuum or remains of the calcined lapis-lazuli.

Prussian blue is a brilliant pigment; it is the fixed sulphur of animal or vegetable coal chemically combined with the earth of alum.

Verditer is the mixture of chalk with the precipitated copper, which is formed by adding the due proportion of chalk to the solution of copper made by the refiners in precipitating the silver from the nitric acid in the operation called parting, in which they have occasion to dissolve it in order to its purification.

Indigo is a tinging matter extracted from certain plants which are found in both the Indies, and from whence the indigos of commerce are imported.

Smalt is glass colored with zaffer, and afterwards ground to a powder.

Kings-yellow is a pure orpiment, or arsenic colored with sulphur.

Naples-yellow is a warm yellow pigment rather inclining to orange.

Yellow-ochre is a mineral earth, which is found in many places, but of different degrees of purity.

Dutch-pink is a pigment formed of chalk, colored with the tinging particles of French

berries. It is not well adapted to work in oil by reason of its color soon flying off.

English and light pink are merely a lighter and coarser kind of Dutch pink.

Gamboge is a gum brought from the East Indies; it is dissolved in water to a milky consistence, and is then of a bright yellow color.

Masticot, as a pigment, is flake-white, or white-lead gently calcined, by which it is changed to a yellow, which varies in tint according to the degree of the calcination.

Orpiment is a fossil body of a yellow color, composed of arsenic and sulphur, with a mixture frequently of lead, and sometimes other metals.

Gall-stone is a concretion of earthy matter formed in the gall bladder of beasts. It is but little used.

Verdigris is an oxide of copper formed by a vegetable acid; it is used in most kinds of painting where green is required.

Crystals of verdigris is the salt produced by the solution of copper or common verdigris in vinegar.

Prussian green is a composition similar to blue of the same name.

Terra verte is a native earth; it is of a bluish green color, resembling the tint called sea-green.

Sap-green is the concreted juice of the buckthorn berry.

Orange-lake is the tinging part of annatto, precipitated together with the earth of alum.

True Indian red is a native ochrous earth of a purple color, but so scarce as seldom to be met with at the color shops.

Archil is a purple tincture prepared from a kind of moss.

Logwood is brought from America, and affords a strong purple tincture.

Brown-pink is the tinging part of some vegetable of an orange color precipitated upon the earth of alum.

Bistre is a brown transparent color of a yellowish tint.

Brown-ochre is a warm brown or foul orange color.

Cologne earth is a fossil substance of a dark blackish-brown color, a little inclining towards purple.

Asphaltum is sometimes employed by the painters to answer the end of brown pink.

White flake is a ceruse prepared by the acid of grape.

Troy white is simply chalk, neutralised by the addition of water in which alum has been dissolved.

Lamp-black is the soot of oil collected as it is formed by burning.

Ivory-black is the coat of ivory or bone formed by giving to them a great heat, all access of the air being excluded.

Blue-black is the coal of some kind of wood burnt in a close heat where the air can have no access.

Such are the several colors employed by painters; they are all to be found in the color shops both in a crude and prepared state. Preparing the colors consists in the first place of grinding them on slabs of porphyry till the particles are reduced to the finest imaginable state;

this is done by saturating them with oil or water, according as the color ground is to be used with either of them.

House-painting is known in the trade by the number of coats of paint applied, and the painting is divided into work in oil and what is technically called flatting. This latter description of work differs from the former only in the color being mixed up with turpentine instead of oil. Good painting is known by the fullness and solidity of its appearance without any marks of the brush; whereas cheap painters care little about this. To give a fresh appearance, and get their work out of hand, and be paid, is their only concern.

In the division of house-painting, as understood between the surveyors and workmen, the chief terms are as follows:—

Clearcole and finish signifies that the work is to be done in the cheapest way, and the process of doing which consists in first dusting and cleaning what is to be painted, and stopping and filling up all cracks and defects with putty. After which the whole is painted over with a paint prepared of whitening and size, which forms the ground for the finish, as it is termed. This finish consists of a coat of oil color prepared with lead. Where the work is not very dirty this kind of painting will answer every purpose, but it is by no means adapted for outside work.

Bringing forward, a term used by painters, applies to such new wood or other work as may have been added to old wood-work; or in cases in which the old wood-work has been repaired, and in consequence partly replanned, the priming and painting such parts to form a ground for the color, so as that it shall appear alike when finished, is the process intended by this term.

Stopping is no more than that the painter is to well fill up all the defects in the work he may have to paint, with putty.

Twice in oil is simply that the work has been twice painted over.

Thrice in oil, and flat, signifies that the work has been done twice over in oil colors and once in color mixed or prepared in turpentine.

Three times and flat may be similarly explained, that is, three coats of oil color and one of turpentine. This latter description of painting is generally that which is required to new wood-work.

The painter's tools are few in number, and they are found for the journeymen by the masters. They consist of a tool, or pound brush as it is called, which is composed of hogs' hair; this they use as a duster, until the ends of the hair of which it is composed are worn away; and become soft; it is then used in the color, being better adapted to spread it evenly by such previous wear. The other brushes vary in size, as the mouldings and work to be painted do; the smallest are to paint over the bars of sashes, or draw out lines which are intended to be left of a different tint from the general tone of the other work.

In mixing up the colors for oil-painting, white-lead forms the base of all ingredients; this the color-preparer modifies and changes by adding colored substances to it, till it is tinged so as to

produce a paint of the color he wishes. All those colors which are derived from vegetable bodies have, at first being spread, a more brilliant effect than those of mineral ones; but no vegetable color will long stand the combined effect of air and light; while the mineral colors, so exposed, remain unchanged. This defect in the vegetable colors is owing to that spontaneous oxidation or carbonization which is effected by the oxygen of the atmosphere on all vegetable matter which it can operate upon freely. To make this phenomenon more obvious, the air occasions a slow combustion or burning to take place, which dissipates the lighter or hydrogenous particle of color, and turns to a state of charcoal those which remain combined in the paint; hence all painting made with colors obtained from vegetable bodies soon appear black and discolored.

Graining is understood among painters to be the imitating of the several different species of scarce woods, such as are used for the best articles of furniture, viz. satin-wood, rose-wood, king-wood mahogany, &c. &c. Imitations of this nature, when well performed, are calculated to give a zest to painting: at Paris every species of wood-work used in their houses, as a part of the building, is done in this manner. The dead-white so much in vogue amongst us is not practised there. To grain satin-wood a ground is previously laid, composed of Naples yellow and ceruse, diluted with oil of turpentine; this is spread very evenly over the work to be grained, and is then left a day or two to get fixed and dry. The painter then prepares his pallet-board with small quantities of the same yellow and ochre, with a little brown, having some boiled oil and oil of turpentine mixed together, to saturate the colors to be used in the operation. He is also provided with several different sized camels' hair pencils, and also with one or more flat hogs' hair brushes. When he has mixed the colors he spreads it over a pannel, or any other small part of the work, first, to see the effect of the tints, and, if it suit what he is about to perform, he perseveres by doing a pannel at a time; and, in the instance of doors and other framing, the pannels are done first, and the margins round them afterwards. The flat hogs' hair brushes, by being dipped in the mixture of oil and turpentine, and drawn down the newly-laid color, occasions the shades and grainings in it: this effect takes place in the color from the brush supplying an excess of saturation to the color it touches; and to produce the mottled appearance, the camels' hair pencils are applied; and, when it is all finished, it is left to fix and dry, after which it is covered by a coat or two of good oil-varnish. The other fancy woods are performed in a similar manner, the painter varying the colors to produce them only. Some of our painters are so expert at this kind of imitation, and also in that of marbles, as to prevent their easy detection, except by the touch. Such kinds of painting are well calculated to last a great many years by being occasionally re-varnished only. It is not greatly dearer than good work in the common way, but it will last ten times as long, without appearing to lose any of its freshness.

Ornamental painting embraces the executing of friezes and the decorative parts of architecture in *chiara obscura*, or light and shade on walls and ceilings. It requires, in the first place, a ground to be well painted of the tint it is proposed to remain, and exactly drawn into the width it is intended to be left on such a ground so formed. The ornament to be painted is to be drawn out neatly with a black-lead pencil, and then to be painted and shaded, to give it its due effect.

Such kind of painting is often painted on slips of paper, or Irish cloth, and pasted up afterwards; some artists also, to facilitate their work, and when the ornament is of a similar pattern all through, do it by what is termed *stinselling*; this method consists in drawing out a certain length of the pattern to be painted very accurately on paper, and then pricking a large sized needle in regular distances all round the pattern through the paper, which they afterwards lay smoothly against the wall to be ornamented and strike its outer surface, which has been pricked through with a small linen bag containing powdered chalk: the powder enters the apertures in the pattern, and fixes itself against the wall, exhibiting the exact outline of the ornaments which the painter immediately fixes by painting it on the wall; by this means a great saving of his time is accomplished. Some paintings in this manner are heightened with gold; this is performed after the ornament is painted in, as it is termed, by the process known as gilding in oil.

Letter or inscription writing is performed by persons known in the trade as letter-writers. The process is similar to ornament painting, excepting the superior ability and taste required in the one, whereas the other is a mere mechanical operation. The letter writer sketches out in pencil the words he has to write, and afterwards corrects the outline by the color which he applies with a camel's hair pencil. When the letters are to be gilt, the process is similar, and as the letters are painted, they are covered with leaf-gold, and when completely covered it is left to fix itself by the drying of the painting on which it has been laid. After which a sponge and water is used to clear away the superfluous gold; the whole is then covered by a coat of good oil varnish. Letter writing is charged by the inch, viz. the height of one of the letters being taken, will, by being multiplied by the number on the whole inscription, denote exactly the quantity of inches which has been written. The price varies, inasmuch as shadowed letters are a halfpenny an inch more than plain ones, and gilt letters are treble the price of either. Twopence an inch is about the average price of inscription letters.

Painters' work is measured by the yard superficial, of nine square feet, and the painter is allowed to take his dimensions over and into every part where the brush has passed. Sash frames are valued at per piece, and sash squares at per dozen, as well as window bars, balusters of stairs, stay bars, &c. Painting done on new stucco is allowed one penny per yard more than when on wooden work, and colors are charged an additional penny more than when done in

plain whites. The painters' charges are regulated in London by the surveyors, and their regulations are made from an average of the price of the best materials of every kind; but painting is frequently offered to be done at from fifteen to twenty per cent. less than the price so regulated. But, perhaps, no branch of trade requires more exact description than painting, as oil and colors may be purchased of all degrees of purity: hence painting, like the gold of the jewellers, will vary in its quality, or fineness, as it varies in the ratio of its alloy or adulteration.

We add, from Mr. Elmes's Dictionary of the Fine Arts, a copious list of books on painting. In the work of Junius, *De Picturâ Veterum*, book 2, chap. iii. sect. 3, and in the *Bibliotheca Græca* of Fabricius, book 3, chap. xxiv. sect. 10, are catalogues of Greek authors who have written upon painting; of which, however, few have reached our times. Among this number are the *Icones* of the two Philostrates; which have been translated into French under the title of *Les Tableaux de Plate Peinture*, &c., by Blaise de Vigenere, corrected and augmented by Th. Embry, Paris, 1615, 1617, in fol. An excellent commentary upon this work may be found in a Memoir of Count Caylus, inserted in the twenty-ninth volume of *Mémoires de l'Académie des Belles Lettres*. To some editions of the works of Philostrates are added a work of Callistrates, entitled *Ἑρμῆας* (that is, explanations or descriptions).

The ancient work which gives the most detailed accounts of the art of painting among the ancients is the Natural History of Pliny, who, in speaking of minerals, takes occasion to speak of colors, and their use in painting; in which subject he treats of the history of ancient painting, in several chapters of the thirty-fifth book. These chapters have been published separately, and commented upon by Durand, in a work entitled *Histoire de la Peinture ancienne*, published at London in 1725, in fol. M. Falconet has also published a translation of the thirty-fourth, thirty-fifth, and thirty-sixth, books of Pliny, with notes, Amsterdam, 1772, 8vo. These chapters of Pliny have also been commented upon, in several articles inserted in the Memoirs of the Academy of Inscriptions and Belles Lettres. (An English translation of the whole work, by P. Holland, was published in 2 vols. fol., London, 1634.)

Count Caylus has given, in the nineteenth volume of the same work, *Eclaircissements sur quelques Passages de Plin qui concernent les Arts dependans du Dessin*; and, in the twenty-fifth volume, three Memoirs, entitled *Réflexions sur quelques Chapitres du trente-cinquième Livre de Plin*. In the second of these memoirs the reflections of the author are particularly directed to the kind and manner of ancient paintings; and in the third the character and manner of the Greek painters. The twenty-fifth volume contains also a Memoir of M. de la Nauze, upon the manner in which Pliny has treated the art of painting. M. Quatremere de Quincy, the learned author of part of the *Encyclopédie Méthodique*, and of Letters from London, in 1818, to Canova, on the Elgin Marbles, announced in 1805 a

new translation of this book; but we are not certain that he published it.

Among modern works upon painting we will first mention those which are written in Latin; among the principal of which are:—L. Bapt. Alberti, de Pictura, libri iii. Basil, 1540, in 8vo. Among the best translations of this work are, one in Italian, published in Venice, 1547, 8vo.; one in French by Jean Martin, among the works of Alberti upon architecture, Paris, 1553, fol.; and one in English, in the edition of his work upon architecture, by Leoni, 1726 and 1739, 3 vols. fol. Also, Joh. Molani de Picturis et Imaginibus Sacris, libri ii., Leovard, 1570 and 1594, 8vo. Robert Fludd, or De Fluctibus, Tractatus de Arte Picturæ, Francof., 1624, fol. Jul. Cæs. Bulenger, de Pictura, Plasticæ, et Statuaria Veterum, printed in his Opuscula, Ludg. Batav. 1621, 8vo.; and also separately under the same title, in 8vo. 1627, as well as in the ninth volume of Trésor de Gronovius. Of this work Thomas Malie has given an English translation, London, 1657, fol. It is merely a nomenclature of the various articles used in painting, and of the manner in which they are prepared. The next in chronological order is the work of Franciscus Junius (Francis Dujong, or Young), entitled de Pictura Veterum, Amst. 1637, in 4to. A new edition of it, much augmented and corrected, was published by Grævius at Rotterdam, in 1694, fol., which is reckoned preferable to the first. At the end of the work is a list of ancient artists, in alphabetical order, which is, perhaps, one of the best parts of the work.

Among the Latin works which treat of the theory and practice of the art, we find:—Speculum Imaginum Veritatis occultæ per Symbola et Emblemata, Auct. Jac. Mosenio, Col. 1661, 1681, 8vo. De Graphice sive Arte Pingendi; which is the fifth chapter of the work of Ger. J. Vossius, entitled de Natura Artium. Joannes Schefferi, Argentinensis, Graphice, id est de Arte pingendi, Norimb. 1669; Upsal, 1699, 8vo. This is an interesting little work, and is well written. De Inanibus Picturis, Diss. Joa. Fr. Jungeri, Lips. 1679, in 4to. By 'picturæ inanes' the author appears to mean those paintings which represent imaginary beings, or scandalous subjects. Dissert. de Pictura, Auct. Hulderic. Sigism. Rothmaler, Jen. 1692, 4to. De Lectione Poetarum recentiorum Pictoribus commendanda, Programma, Joh. G. Jacobi; Hal. 1766, 4to. De pictura contumeliosa, Diss. Joh. Lud. Kluber, Erl. 1787, in 4to. Car. Hodoby de Hoda, Ars delineandi Coloribusque localibus adumbrandi, 1790, 8vo. Car. Adol. Du Fresnoy, de Arte graphica, Paris, 1658.—A poem on the art, with the French version by De Piles, of which Dryden published a prose translation in 1694; Wills, an English painter, a metrical translation without rhymes; and again Mason, in 1782, a translation, with notes by Sir Joshua Reynolds.

Among the works written in Italian are, Discorso eruditissimo della Pittura, con molte segrete Allegorie, circa le mause, published in the Instituzione al comporre in ogni Sorte, di Rima, &c., of Mar. Equicola, Milan, 1541, 4to. Dialogo de Pittura, di Paolo Pino, Ven. 1548, 4to.

Trattatello della nobilissima Pittura, e della sua Arte, della Doctrina, e del Modo per conseguirla agevolmente, da Mich. Ang. Biondi, Ven. 1549, 8vo.: a little and very superficial work. Il Disegno del Anton. Franc. Doni, dove si tratta della Scoltura, Pittura, de Colori, de Getti, de Modegli, con molte cose appartenenti a quest' Arti, Venegia, 1549, 8vo. —a useful little work stored with excellent directions. Della nobilissima Pittura, e della sua Arte, del modo e della Dottrina di conseguirla agevolmente e Presto, da Biondo, Venice, 1549, 8vo. Introduzione alle tre Arti del Disegno, thirty-five chapters (for an account of which see Vite de Pittori da Vasari. L'Aretino, Dialogo della Pittura, di Lod. Dolce, nel quale si raginano della Dignità di essa Pittura, e di tutte le Parte necessarie che a perfetto Pittore si acconvegano: con Esempi di Pittori ant. e Mod. e nel Fine si fa menzione delle Virtù e delle Opere del divin Tiziano, Venice, 1557; of which there is a more modern edition, with a French translation (printed at Rome, 8vo.), and a long preface by the translator; also an English translation published in London, 1782, 12mo. Osservazioni nella Pittura, di M. Cristofano Sorte, Venice, 1580, 4to. Lettera di Bartolomeo Ammanati, sopra le Pitture men che oneste, Firenze, 1582, 4to. Il Riposo di Raffaello Borghini, in cui si favella della Pittura e delle Scoltura, et de più illustri Pittori e Scultori, antiche e moderni, Firenze, 1584, in 8vo.; of which there has been a new edition, augmented and corrected by Antonio Maria Biscioni, Firenze, 1730, 4to.; and a much later one in 3 vols. 8vo. Parere sopra la Pittura, di M. Bernard. Campi, Pittore Cremonese, Cremona, 1584, 4to. Discorso d'Allessandro Lamo intorno alla Scoltura et Pittura, Cremona, 1584, 4to. Trattato dell' Arte della Pittura, ne' quali si contiene tutta la Teorica e la Pratica di essa Pittura, da Giovanni Paolo Lomazzo, Mil. Pittori, div. in vii. libri, Milano, 1584 4to. The same work is also to be found under the following title, Trattato dell' Arte della Pittura, Scoltura, et Architettura, da G. P. Lomazzo, Mil. Pitt. div. in vii. libri ne' quali si discorre della Proporzione, de' Moti, de Colori, de' Lumi, della prospettiva, della Pratica, della Pittura, e finalmente de le Istorie d'essa Pittura, con una Tavola de' Nomi de tutti le Pittori, Scultori, Architetti, e Matematici, antichi e moderni, Milan, 1585 and 1590, in 4to. There is an English translation of this work by Haydok, London, 1598, fol.; and a French translation of the first book, which appeared at Toulouse in 1649, in folio. To this work we must add another by the same author, entitled Idea del Tempio della Pittura nella quale si discorre dell' Origine e del Fondamento delle cose contenente del trattato, dell' Arte della Pittura, Milan, 1571, in 4to. De' veri Precetti della Pittura de Giovanni Bat. Armenini da Faenza, lib. iii. ne' quali con bell' Ordine d' utili e buoni Avvertimenti per chi desidera in essa Farsi con prestezza eccellente si dimostrano, i Modi principali del disegnare e del dipingere, di fare le Pitture che si convengono alle Condizioni de' Luoghi e delle Persone, Ravenna, 1587, in 4to., and Venice, 1678, in 4to. Il Filogino, Ovvero del

Fine della Pittura; Dialogo del P. D. Gregorio Commanino, Canon. Later. nel quale s' mostra qual sia l'imitare più perfetto, o il Pittore, o il Poeta, Mantova, 1591, 4to. Definizione e Divisione della Pittura, di Giovan. Batt. Paggi, Nobile Genov. e Pittore, Geneva, 1607, folio. L'Idèa de' Pittori, de' Scultori, e degli Architetti, del Cav. Feder. Zuccheri, in due libri, Torino, 1607, 4to. This work is to be seen also in the sixth volume of the Raccolta di Lettere sulla Pittura, Scultura, e Architettura, Rome, 1754, 7 vols. 4to. Avvertimenti e Regole sopra l'Architettura, civile e militare, la Pittura, Scultura, e Prospettiva, da Pier' Antonio Barca, Milan, 1620, folio. Trattato della Pittura, fatto a commune Beneficio de' Virtuosi, da Fra. Dom. Francesco Bisagno, Cavaliere di Malta, Ven. 1642, 8vo. La prima Parte della Luce del dipingere, di Crisp. del. Passo, Amsterd. 1643, folio. Trattato della Pittura, de Lionardo da Vinci, dato in Luce con la Vita dell' istesso Autore scritta da Raff. Du Fresne, Paris, 1651, and Naples, 1733, folio, with engravings after designs made by Poussin. There was a new edition of it published at Florence, 1792, 4to., augmented with the life of the author by Franc. Fontani. There is also a translation of it into French by Rol. Freart. de Chambray, 1651, fol. 1716, 1724, &c., and an English translation, London, 1721, 8vo. Trattato della Pittura e Scultura, uso ed abuso loro, composto da un Teologo (Pere Ottonelli), e da un Pittore (Pietro di Cortona), in cui si risolvono molti Casi di Coscienza intorno al fare e tenere, le Immagine sacre e profane; si riferiscono molte Historie antiche e moderne, si considerano alcune Cose d' alcuni Pittori morti e famosi del nostro Tempo, e si notano certi avvisi e certi particolarità circa l'operare secondo l'Osservazioni fatte in alcune Opere, di Valent. Luomi Firenze, 1652, 4to. Il Microcosmo della Pittura, di Franc. Scanelli da Forlì; Cesena, 1657, 4to. Carta del Navigar pittoresco, dial. in quarta Rima, in Dialetto Venez. da Marco Boschini, Venezia, 1660, 8vo. Le Minere della Pittura, di M. Boschini, Venice, 1664, 4to. In the Prodomo alle Arte maestra, di. Franc. Lana, Brescia, 1670, fol.: the author treats of invention, of design, of colors, and of the different kinds of painting. Riflessioni sopra la Pittura di Nicolas Poussin, printed in the Vite de' Pittori, de' Scultori, ed Architetti moderni, par Bellori, Rome, 1672, 4to. Il Vocabolario Toscano dell' Arte del Disegno, co' propri Termini e Voci non sola della Pittura, Scultura, e d'Architettura, ma Ancora di altre Arti, e che hanno per Fondamento il Disegno, di Fil. Baldinucci, Firenze, 1681, 4to., of which Ant. Mar. Biscioni has given a new edition, published at Florence, 1730, 4to. Baldinucci is also the author of Lettera nelle quale si risponde ad alcuni quesiti in Materie di Pittura e Scultura, Rome, 1681, 4to.; and of La Veglia, Dialogo di Sincero Vero (Philip Baldinucci), in cui si disputano, e scogliono varie Difficoltà pittoriche, Lucca, 1684, 8vo., and in the Raccolta di alcuni Opuscoli, da Fil. Baldinucci, Fir. 1765, 4to. Bellori, della Pittura antica, Venez. 1697. Le Pittura in Parnasso, da Giovanni Maria Ciocchi, Pittore,

Firenze, 1725, 4to. La Teorica della Pittura, ovvero Trattato delle Materie più necessarie per apprendere con Fondamento quest' Arte, composto da Ant. Franchi, pittore Lucchese, Lucca, 1739, 8vo. Sfogamenti d'ingegno sopra la Pittura e la Scultura, da P. Franc. Minozzi, Venice, 1739, 12mo. Dialoghi sopra le Arti del Disegno, by Bottari, Lucca, 1754, 8vo. Avvertimenti di Giampa. Cavezzoni Zanotti, per lo incamminamento di un Giovane alla Pittura, Bal. 1756, 8vo. Dissertazione sopra l'Arte della Pittura dell' Abbate Giovanni Andrea Lazzarini, in the ninety-seventh and following pages of the second volume of the Nuova Raccolta d'Opuscoli scientif. e filol. reprinted at Pesaro, 1763, 4to.; and in the Catalogo delle Pitture nelle chiese di Pesaro, Pes. 1783, 8vo. Saggio sopra la Pittura, by count Algarotti, Livorno, 1763, 8vo.; of which there is a French translation by Pingeron, Paris, 1769, 12mo., and an English translation, 12mo. London, 1783. L'Idèa del profetto Pittore del servire di Regola nel Guidizio, che si deve formare Intorno all' Opere de' Pittori, accresciuta della Maniera di dipingere sopra le Porcellane, Smalto, Vetro, Metalli, e Pietre, Venice, 1771, 4to. Dell' Arte di vedere nelle bell' Arti del Disegno, secondo li Principi di Sulzer e di Mengs, Venice, 1781, 8vo. The works of Mengs, in their various editions and translations. A poem, entitled dell Arte Pittorica, in eight cantos, by count Ad. Chiusole, Venice, 1768, 8vo., will afford some pleasure; it has been abridged into four cantos, under the title of Precetti della Pittura, Vic. 1781, 8vo. Storia della Pittura in Italia da Luigi Lanzi. The best edition of which is in six volumes 8vo., Bassano, 1809. Vincenzo Requeno, saggi sul Ristabilimento dell' antica Arte de' Greci e Romani Pittori, Rome, 1786. A second edition of which appeared in 2 vols. Parm. 1787. Storia della Pittura e della Scultura dai Tempi antichi. This work, which is written in Italian and English, has also the following title:—The History of Painting and Sculpture, by Thomas Hickay, and was published at Calcutta in 1788, 4to.

Among the works written in Spanish upon the theory of painting are the following, namely:—Arte dei Pintura, symmetria y perspectiva, por Phil. Nunnez, in Lisbon, 1615, 4to. Memorial informatorio, por los Pintores, Madrid, 1629, 4to. Dial. de la Pintura, su Defensa, Origen, Essencia, Definicion, Modos, y Diferencias, por Vinc. Carducho, Firent. Madrid, 1633 and 1637, 4to. Trattato de la Pintura, su antiguedad y grandezas, por Franc. Pacheco, Seville, 1649, in 4to. El Museo pintorico, y escala Optica, por Ant. Palamino Velasco, Madrid, 1715, 1724, 3 vols. fol. Under the title of La Pittura, Diego Ant. Regon de Silva has printed in 1788, at Segovia, a poem in three cantos, of which painting is the subject.

Among the works of French authors on this subject are the following:—Idée de la Perfection de la Peinture démontrée par les Principes de l'Art et par des Exemples conformes aux Observations que Plin et Quintilien ont faits sur les plus célèbres Tableaux des anciens Peintres, mis en Parallèle avec quelques Ouvrages de nos

meilleurs Peintres modernes, Lion. da Vinci, Raffaele, Jules Romain, et Le Poussin, par Roland Freart, Sieur de Chambray, au Mans, 1662, 4to.; Paris, 1672, 8vo. Le Peintre converti aux Règles précises et universelles de son Art, avec un Raisonnement au Sujet des Tableaux, by Abr. Bosse, Paris, 1667, 4to. Des Principes de l'Architecture, de la Peinture, Sculpture, et des autres Arts qui en dépendent, avec un Dictionnaire propre à chacun de ces Arts, par André Felibien, Paris, 1669, 1697, 4to. Conférences de l'Académie royale de Peinture et de Sculpture pendant l'Année 1667, Paris, 1669, 4to.; Amst. 1706, in 12mo.; and in the fifth volume of *Entretiens sur les Vies des Peintres*, by the same, Trev. 1725, in 12mo. *Traité de la Pratique de la Peinture*, par Philippe de la Hire, in l'Histoire de l'Académie des Sciences de Paris, 1666—1669, vol. ix. page 635, and following. L'Académie de la Peinture nouvellement mise au jour pour instruire la Jeunesse à bien peindre en Huile et en Miniature, par la Fontaine, Paris, 1679, 12mo. Conférence de l'Académie, avec les Sentimens des plus habiles Peintres sur la Pratique de la Peinture et de la Sculpture, avec plusieurs Discours academiques, par Henry Testelin, Paris, 1696, fol. Livre de Secrets pour faire la Peinture, 1682, 12mo. Cours de Peinture par Principes, by M. Roger de Piles, Paris, 1708, 1720, 12mo. This work forms the second volume of his *Œuvres diverses*, Amsterdam, 1766, 12mo. *Elémens de la Peinture-pratique*, by the same, Paris, 1684, 12mo.; 1708, 12mo. Ch. Ant. Jombert has given an enlarged edition of it, 1766, 8vo., which forms the third volume of his *Œuvres diverses*, Amster. 1766, 12mo. Many authors, and among others M. de Murr, in his *Bibliothèque de Peinture*, at page 151, have attributed this work to Jean Baptiste Corneille, who is not the author of the engravings which are in it. *Traité sur la Peinture, pour en apprendre la Théorie et se perfectionner dans la Pratique*, par Barnard Dupui du Grez, Toulouse, 1699, 4to. *Réflexions sur la Poésie et sur la Peinture*, by the Abbé Jean Baptiste Dubos, Paris, 1719, 2 vols. 12mo. There have appeared enlarged editions of it in 1733, and 1740, in 3 vols. 12mo. Discours prononcés dans les Conférences de l'Académie royale de Peinture et de Sculpture, by Antoine Coypel, Paris, 1721, 4to. *Dialogues sur la Peinture*, by Fenelop. They are joined to the *Life of Mignard*, by the abbot Monville, Amst. 1731, in 12mo. In the *Choix des Mercurès*, vol. ii. p. 167, is a letter upon painting, M. Brossard de Mantenei. *Observations sur la Peinture*, London, 1736, 8vo. *Réflexions sur la Peinture*, by M. de la Font de Saint Yenne, 1746, 12mo. *Lettres sur la Peinture*, à un Amateur, par Louis Guillaume Baillet de Saint Julien, Genève, 1750, 12mo. *Essai sur la Peinture, Sculpture, et Architecture*, by Louis de Bachaumont, Paris, 1752, 8vo. Jaq. Gautier, *Observations sur l'Hist. naturelle, sur la Physique, et sur la Peinture*, Paris, 1752, 6 vols. *Observations sur la Peinture et sur les Tableaux anciens et modernes*, by the same, Paris, 1753, 2 vols, 12mo. In the *Recueil de quelques Pièces concernant les Arts*, by Cochin, Paris,

1757, 12mo. page 121, is a *Mémoire sur la Peinture*, which had already appeared in the *Mercur de France*. *Discours sur la Peinture et sur l'Architecture*, by M. du Perron, Paris, 1758, 8vo. *Réflexions sur les différentes Parties de la Peinture*, is found with l'Art de Peindre of Watelet, Paris, 1760, 4to. 1761, 12mo. In l'Amateur; ou, *Nouvelles Pièces et Dissertations pour servir aux Progrès du Goût et des Beaux Arts*, Paris, 1762, 8vo., are some reflections upon colors. *Traité de la Peinture*, suivi d'un *Essai sur la Sculpture*, pour servir d'Introduction à une *Histoire universelle relative à ces beaux Arts*, by André Bardon, Paris, 1765, 2 vols. in 12mo. *Observations raisonnées sur l'Art de la Peinture appliquées à la Galerie de Dusseldorf*, by Fredon de la Bretonniere, Dusseldorf, 1776, 8vo. *Principes abrégés de Peinture*, par M. Duterns, Tours, 1779, 8vo. *Traité des Principes et des Règles de la Peinture*, by M. Liotard, Genève, 1781, 8vo. *Réflexions sur la Peinture et la Gravure*, by C. F. Joullain, 1785, 12mo. The author of this work speaks particularly of the dealing in pictures. There are also several memoirs upon this matter in the *Bibliothèque des Artistes et des Amateurs*, by the Abbé Jean Raymond de Petit, 1766, 3 vols. 4to.

Many French didactic poems have been written on painting; such are:—*La Peinture*, a poem, 1755, 12mo. *L'Art de peindre*, by Watelet, Paris, 1760, 4to., Amst.; 1761, 12mo. *La Peinture*, a poem, crowned at the floral games in 1767, by M. Mich. d'Avignon, Lyons, 12mo. *La Peinture*, a poem in three cantos, by La Mierre, Paris, 1770, 4to.; Amst. 1770. 12mo. There are also to be found some interesting articles in the *Grand Livre des Peintres ou l'Art de la Peinture*, considéré dans toutes ses Parties et démontré par Principes avec des *Réflexions sur les Ouvrages de quelques bons Maîtres et sur les Défauts qui s'y trouvent*, par Gerard de Laresse, Paris, 1787, 2 vols. 8vo.

Among the older works in the English language upon this subject are:—A proper Treatise wherein is briefly set forth the Art of Limning, London, 1625, 4to. *Ars Pictoria*; or, an Academy treating of Drawing, Painting, Limning, and Etching; to which are added thirty copper plates, expressing the choicest, neatest, and most exact grounds and rules of symmetry collected out of the most eminent Italian, German, and Netherland authors, by Alexander Brown, London, 1660, 8vo.; 1669 and 1675, small folio. *Introduction to the general Arts of Drawing and Limning*, London, 1674, 4to. *Painting illustrated*, in three Dialogues, containing some choice Observations upon the Art; together with the lives of the most eminent Painters from Cimabue to the time of Raffaele and Michel Angiolo, with an explication of the difficult terms, Lond. 1685, 4to., 1719, 4to., 1785, 4to., by Will. Aglionby, and the lives of painters are corrected after Vasari. *Polygraphice*; or the Art of Drawing, Engraving, Etching, Limning, Painting, Washing, by Salmon, Lond. 1678, 2 vols. 8vo.; 1701, 2 vols. 8vo. *The Art of Painting of the best Italian, French, and German Masters*, London 1692, fol. Art of

Painting in Oil, and Method of Coloring, by J. Smith, London, 1753, 12mo. Art of Painting after the Italian Manner, by M. Elsum, London, 1704, 8vo. Essay upon the Theory of Painting, by Richardson, London, 1719, 8vo. This work forms the first volume of a Treatise on Painting, of the same author, which has been translated into French by A. Rutgers; Amst. 1728, 8vo. 4 parts in three vols. The Art of Drawing and Painting in Water Colors, by J. Smith, London, 1730, 1732, 1757, and 1779, in 12mo. Essay upon Poetry and Painting, with relation to the Sacred and Profane History, by Charles La Motte, London, 1730, 12mo. The Principles of Painting, London, 1744, 8vo. Polymetis; or, an Enquiry concerning the Agreement between the Works of the Roman Poets and the Remains of the ancient Artists, by John Spence, London, 1747, 1755, and 1774, fol. Tindal has given an abridgment of it, London, 1765, republished in 1786, 8vo. Plan of an Academy of Painting, Sculpture, &c., London, 1755, 4to. Practice of Painting and Perspective, in which is contained the Art of Painting in Oil, with the method of Coloring; first Painting or Dead Coloring, second Painting, third or last Painting, Painting Backgrounds, Copying, Drapery, and Landscape Painting, by Th. Bardwell, London, 1756, 1773, and 1782, 4to. Enquiry into the Beauties of Painting, and into the Merit of the most celebrated Painters, ancient and modern, by Dan. Webb, London, 1777, 4to. A Letter on Poetry, Painting, and Sculpture, by King, London, 1768, 12mo. Seven Discourses delivered in the Royal Academy by the President Sir Joshua Reynolds, London, 1778, 8vo. There was a French translation of it published in Paris in 1787, 2 vols. 12mo. Several other Discourses of Reynolds have since been published, and are now collected in his works, London, 4to., 1796, &c. Sketches on the Art of Painting, by Talbot Dillon, 1782, 8vo. The Artist's Repository and Drawing Magazine, exhibiting the Principles of the polite Arts in their various Branches, London, 1784, in 4to. There are to be found also some curious details upon painting in the Handmaid to the Arts, by M. Dossie, London, 1764, 2 vols. 8vo., as in the School of Arts, London, 1785, 8vo.

Among the English poems upon painting are—A Poetical Epistle to an eminent Painter, 1778, 4to., by W. Hayley, Esq.; and the Beauties of Painting, by Pollinger. Robinson, 1783, 4to.

More modern works by Opie, Fuseli, West, and others, are so well known that they are omitted to make room for the enumeration of others less common.

In the Dutch language are—Inleyding tot de hooghe School der Schilderkonst door Sam. Van Hoogstraeten, Middelb. 1641. 4to; Rotterd. 1678, 4to. Willh Gære, Natuurlyk en schilder-konstig Ontwerp der Menschenkunde: leerende niet alleen de Kennis van de Gestalte, Proportie, Schoonheyd, Muskelen, Bewegingen, Actien, Passien en Welstand des menschenbeelden, tot de Teykenkunde, Schilderkunde, Beldhouwery, Botseer en Giet-Oeffening toe passen; maar ook hoe sich een mensch na deselve Regelen, in al-

lerhand Doeningh van Gaan, Staen, Loopen, Torssen, Dragen, Arbeyden, Spreken en Andere gebeerden bevallig en verstandelijk aanstelen zal, Amst. 1682. An excellent work, with many fine engravings. Der leermester der schilder-konst, eertyds in rym gestelt door Karel van Mender, weder aan't licht gegeven en ontrymi'd door Wibrandus de Geest, Schilder, Leawarden, 1712, 8vo.

Among works upon painting written in German, whose titles we have been able to collect, we shall mention—Le Livre curieux des Arts à l'Usage des Peintres, Sculpteurs, et Orfèvres, par Henri Vogtheren, Strasburg, 1543, 4to. Le Manuel des Arts de Sébald Beham, propre à apprendre à peindre et à dessiner d'après les véritables Proportions et Divisions du Cercle à l'usage des Peintres et des Artistes, Francfort, 1605, 4to., with fifty-seven engravings in wood. L'Academia tedesca della Architettura, Scultura, e Pittura, Nurembourg, 1675, 1679, 2 vols. fol. Le vrai Chemin à suivre pour apprendre à peindre, par Guillaume Stettler, Berne, 1679, 12mo. Le Peintre curieux, Dresden, 1679, 8vo., with engravings. Le Peintre instruit, habile, galant, et édifiant, par J. Dauw, Copenhagen, 1721, 8vo.; an enlarged octavo edition by Charles Bertrand, ib., 1755, 8vo. Principes de la Peinture et du Dessin, par Joseph Widtmaisser, Vienna, 1731, 4to. Le Peintre instituteur, montrant aux Amateurs comment il faut s'y prendre pour apprendre à peindre en Huile, en Pastel, en Fresque, &c., by Jean Melchior Croecker, Jena, 1778, 8vo. Idées sur l'Imitation des Monumens Grecs en Peinture et Sculpture, Dresden, 1754 and 1756. Epître au Sujet de l'Ouvrage précédent, Dresden, 1755, 4to. Dissertations upon the work: Idées sur l'Imitation des Monumens Grecs, ib. 1756, 4to., Jean Winckelmann. La Manière d'apprendre à peindre: Ouvrage dans lequel on montre l'Excellence et l'Utilité de cet Art, l'Usage qu'on doit en faire, et comment on doit s'y perfectionner, &c., Leipsic, 1756, 8vo. Réflexions sur la Peinture, by Chrétien Louis de Hagedorn, Leipsic, 1762, 2 vols. 8vo. This work has been translated by Huber, Leipsic, 1775, 8vo. Du Laocoon; ou, des Limites respectives de la Poésie et de la Peinture, by G. E. Lessing, Berlin, 1766. M. Charles Vanderbourg has given a French translation of it, Paris, Renouard, 1802, 8vo. Dissertations sur la Théorie de la Peinture et du Dessin, où on établit les vrais Principes propres pour former le Goût dans les Arts, Francfort et Leipsic, 1769, in 8vo. Sur la Nature et l'Art dans les Tableaux, la Sculpture, l'Architecture, et la Gravure, Leipsic, 1770, 2 vols. 8vo. par Christophe Scheyb. The same author has also published another work upon this subject: it is entitled Orestrio sur les Arts du Dessin, avec un Appendix sur la Manière de faire des Empreintes en Souffre, Plâtre, et Verre, et graver en Pierres dures, &c., Vienna, 1764, 2 vols. 8vo. Instruction sur l'Etude de la Peinture en tant qu'elle appartient aux beaux Arts, et la Peinture comme métier, prouvée d'une Manière pratique, par E. L. D. Huch, Halle, 1773, 8vo. L'Etude du Dessin et de la Peinture, à l'Usage des Commencans, suivi d'une Liste des plus célèbres Peintres, Sculpteurs, et Archi-

tectes, ainsi que des Académies et Ecoles, par Chrétien Louis Reinhold, Goetingue, 1773, 8vo., with forty-five engravings. *Système des Arts du Dessin*, suivi d'une Introduction à l'Etude des Antiques, Hiéroglyphes, et Attributs allégoriques modernes, by the same, Munster, 1784, 8vo., with forty engravings. We may regard, as a continuation and supplement of this work, *L'Ecole du Dessin et de la Peinture*, Munster, 1786, 8vo., with forty-five engravings: and *l'Académie des beaux Arts*, &c., with fourteen engravings, Munster, 1788, 8vo., both by the same author. *Principes de la Peinture*, par Junker, Zurich, 1775, 8vo. *Académie des Arts du Dessin*, par Chrétien Frédéric Prangen, Halle, 1778, 2 vols., 8vo. *Leçons sur les Arts du Dessin*, destinés aux Elèves des Académies des Arts, par H. A. Mertens, Leipsic, 1783, 8vo. *Instruction sur la Théorie et la Pratique du Dessin et de la Peinture*, pour les Commencans de cet Art, Altona, 1778, in 8vo., with engravings. *Bibliothèque des Arts*, destinée aux Peintres, Dessinateurs, Graveurs, et Sculpteurs, en Forme de Lettres, par C. Lang, Erlangen, 1779. The same author has given a continuation of this work under the title of *Lettres à l'Usage des Peintres, Dessinateurs, &c.*, Francf. 1791 et 1792, 2 vols. 8vo. *Magasin pour les Arts du Dessin*, Munich, 1791, 8vo. *Théorie de la Peinture*; ou, *l'Instruction sur la Peinture d'Histoire à l'Usage des Commencans*, par Christophe Fescl, Wurtzbourg, 1792, 8vo.

Among the best Latin works which treat on various subjects connected with the art of painting, or in praise of the arts in general, may be enumerated *Martin Frisius, de Erroribus Pictorum*, Hafnie, 1703, 4to. *Muller, de Pictura, Dissertatio juridica*, Jen. 1712, 4to. *Brunquell, de Pictura honesta ac utili*, Jen. 1733, 4to. C. F. Voita Berg, *de Pictura famosa*, Jen. 1703, 4to. *Fichtner, de eo quod justum est circa Picturam*, Altorf, 4to. *Theoph. Boerner super Privilegiis Pictorum*, Lipsiæ, 1751, 4to. *Durr Franc. Ant. de Probatione per Picturas in sacris, Moguntiae*, 1779, 4to. *Kluber Joannes Ludov. de Pictura contumeliosa*, Erlangen, 1787, 4to.

The best Italian works on the same subjects are:—*Trattato della Nobiltà della Pittura*, composto ad istanza della Venerab. Comp. di S. Luca, et della Nob. Acad. de' Pittori di Roma, da Rom. Alberti, Roma, 1585, 4to. Another edition of the same work was published at Pavia in 1604, also in 4to. The second of the *Lezioni* di M. Ben. Varchi, Firenze, 1549 and 1590, 4to., is entitled, *Qual sia più nobile la Pittura o la Scultura?* Gli Onori della Pittura, e della Scultura, *Discorso* di Gianb. Bellori, Lucca, 1677, 4to. *Pregi della Pittura*, di Dom. Palletta, Roma, 1688, 8vo. *La Pittura in Giudizio*, ovvero il Bene delle oneste Pitture, ed il Male delle Oscene, di C. Gregor. Rosignoli, Venezia, 1696, 12mo., and another edition at Bologna, 1697, also in 12mo. *Le tre belle Arti in Lega con l'Armi per difesa della Religione*, Oraz. di Vinc. Lucchesini, Roma, 1716, 8vo. *Orazione in Lode della Pittura, Scultura, ed Architettura*, da Nicolas Fontingueri. This tract is printed in the second volume of the *Prose degli Arcadi*, Rome, 1718, 8vo. *Orazione della Pittura, Scul-*

tura, ed Architettura, giovano per l'acquisto delle Scienze, da Vinc. Santini, printed in the third volume of the same work. *Orazione in Lode della Pittura, Scultura, ed Architettura* di Giambattista Alessandro Moreschi, Bologna, 1781, 8vo. *Esame ragionato sopra la Nobiltà della Pittura e della Scultura*, per Nicolas Passeri, Napoli, 1783, 8vo.

In the Spanish language the most esteemed works on the same subjects are—*Discursos apologeticos en quese defiende la Ingenuidad del Arte de la Pintura*, que es liberal y noble de todos Derechos, por Juan de Butron, Madrid, 1626, 4to. *Por el Arte de la Pintura*, por D. Juan Xanregui, Madrid, 1633, 4to.

In French—*Eloge de la Peinture*, par Philippe Angele, Paris, 1642, 12mo. *Ichnographie*; ou, *Discours sur les quatre Arts d'Agriculture, Peinture, Sculpture, et Gravure*, avec des Notes historiques, cosmographiques, chiffres, Lettres initiales, Logogripes, &c., par M. Hebert, Paris, 1767, 5 vols., 12mo.

In English—*A Parallel between Poetry and Painting*, by Dryden, Lond. 1695, 4to., inserted as a preface to that great poet's translation of *Du Fresnoy*. The various editions of the *Lectures of Reynolds, Barry, Fuseli* (some passages from whose work have been extracted in the course of this article), *Opie, West, &c.* The *Artist*; a Collection of *Essays on Art*, by various English artists, edited and conducted by Prince Hoare, Esq., London, 1809, 2 vols. 4to. Our intention being more to direct our readers to scarce and valuable foreign works than to well known English treatises, this portion is rendered necessarily brief.

In the German language are to be found—a reply to the following question:—*Does Painting possess any influence over a state?* Hamburg, 1763. *Advice to young Artists to apply themselves to Literature*, by H. de Sonnenfels, Vienna, 1768, 8vo. *An Enquiry whether Painting produces a greater effect than Music*. A Dialogue, by Herder, inserted among the *Miscellaneous Works* of that author, published at Gotha, 1785, in 8vo.

The principal Lexicons and Dictionaries on Painting are:—*Dictionnaire Abrégé de Peinture et d'Architecture*, où l'on trouve les principaux Terms de ces deux Arts, avec leur Explication, la Vie abrégée des grands Peintres et des Architectes célèbres, et une Description succincte des plus beaux Ouvrages de Peinture, de Sculpture, et d'Architecture, soit antiques, soit modernes, par l'Abbé Marsy, Paris, 1746, 2 vols. 8vo. *Dictionnaire portatif des beaux Arts*, par Lacombe, Paris, 1766, 8vo. *Dictionnaire portatif de Peinture, Sculpture, et Gravure*, avec un *Traité pratique des différentes Manières de peindre*, par D. Ant. Joseph Pernetty, Paris, 1757, 8vo. *Dictionnaire Iconologique*; ou, *Introduction à la Connoissance des Peintres, Sculptures, Estampes*, par M. Prezel, Gotha, 1758, 8vo. *Dizionario portatile delle belle Arti*, che contiene quanto è di più rimarchevole nella Pittura, Scultura, Intaglio, &c., colla Vita de' più celebri Professori delle medesime Arte, Venezia, 1758, 8vo. *Nouveau Dictionnaire des Peintres*, pour acquérir une Connoissance exacte des bons Tableaux anciens et modernes, avec un Appen-

dix de quelques Monogrammes, par Louis de Winckelmann, Aug. 1796, 8vo. (in German). Dictionnaire des Arts de Peinture, Sculpture, et Gravure, par Watelet et Levesque, Paris, 1792, 5 vols. 8vo. Théorie générale des beaux Arts, rédigée par Ordre alphabétique, par J. G. Sulzer, Leipsic, 1793, 4 vols. 8vo. (in German).

On the preservation of pictures we may consult, Recueil des Mémoires et diverses Expériences, faites au Sujet de la Conservation des Tableaux, avec un Discours sur l'Incorruptible, par G. Dagly, Berlin, 1706, 8vo.

On the origin, antiquity, and history of painting among different nations, we may cite, Joa. Nicolai Funnii, Diss. de Picturæ Usu et Origine, with his Dissertationes academicæ, 1746, 8vo., 470th and following pages. Lettere dell' Origine, Uso, ed Abuso della Pittura, in the Lettere scelte del Abbate Pietro Chiari, Venice, 1750, 8vo. page 172. De l'Ancienneté de la Peinture, par Fraguier, to be found in the first volume of Mémoires de l'Académie des Belles Lettres. On the Origin and History of the Art, by Studemund. Jena, 1767, 8vo.

On the history of painting in general—Histoire des Arts qui ont rapport au Dessin, divisée en trois Livres, où il est traité de son Origine, de son Progrès, de sa Chute; et de son Rétablissement, par Monier, Paris 1705, 8vo. The Perfect Painter; or a History of the Origin, Progress, and Improvement of Painting, 1730, 12mo. Introductio ad Historiam Artis Delineatorie, by Peter Ciner, included in his Dissertationes Literariæ, Florence, 1742, 8vo. Essai d'une Histoire des Arts du Dessin, par A. F. Busching, Hamburgh, 1761, 8vo. Della Patria degli Arti del Disegno del Gherardo d'Arco, Cremona, 1785, 8vo. Anecdotes des Beaux Arts, contenant tout ce que la Peinture, la Sculpture, la Gravure, l'Architecture, et la Vie des Artistes offrent de plus curieux et de plus piquant chez tous les Peuples du Monde, depuis l'Origine de ces différens Arts jusqu'à nos Jours, Paris, 1776, 8vo. 3 vols. Domenico Manni, del vero Pittore Luca et del Tempo del suo fiorire, Florence, 1764, 4to. Dell' Errore che persiste di attribuirsi la Pittura al S. Evang. by the same, Florence, 1766, 4to.

On the state of painting among the Greeks and Romans:—De l'Amour des beaux Arts, et de l'extrême Considération que les Grecs avoient pour ceux qui les cultivoient avec Succès, par Caylus, &c., in the twenty-first volume of Mémoires de l'Académie des Belles Lettres. Histoire de la Peinture ancienne, extraite de l'Histoire naturelle de Plin, avec le Texte Latin, corrigé sur les Manuscrits de Vossius et sur la première Edition de Venise, et traduite en François par D. Durand. London, 1725, folio. We may recognise, as a continuation of this work, the Treatise of the count de Caylus, on the Pictures of Polygnotus, on several passages of Pliny relating to the Arts, on the Picture of Venus, by Apelles, &c., in the 19th, 27th, 29th, and 30th, vols. of Mémoires de l'Acad. des Inscriptions et Belles Lettres. The third and fourth parts of the work entitled Gallus Romæ Hospes, par L. Mont Josieu, Rome, 1585, 4to. (and to be found in the ninth volume of the Trésor of Gronovius),

treat of antique sculpture and painting. De l'Origine de la Peinture et des plus excellens Peintres de l'Antiquité, Paris, 1660, 4to. Des Peintres anciens et de leurs Manières, in the tenth volume of Nouveaux Choix des Mercur. Joann. Fonseca, de Pictura veterum. Delle Pittura antica, da G. B. Bellori, Venice, 1697, 4to. Treatise on ancient Painting, containing Observations on the Rise, Progress, and Decline of that art among the Greeks and Romans, &c., by George Turnbull; adorned with fifty pieces of ancient painting discovered in the ruins of old Rome, accurately engraved from drawings of Camillo Paderni, Lond. 1740, folio. Enquiry into the Causes of the extraordinary Excellency of ancient Greece in the Arts, London, 1767, 8vo. In the Archaeologia Literaria of Ernesti, in that of Martini, and in that of Siebenkees, appear chapters on painting among the ancients. Sur la Peinture des Anciens, par Falconet, in the sixth volume of his works, Lausanne, 1781. Recherches sur l'Origine, l'Esprit, et le Progrès des Arts de la Grèce, sur leur Connexion avec les Arts et la Religion des anciens Peuples de l'Inde, de la Perse, du reste de l'Asie, de l'Europe, et de l'Egypte, London, 1785, 4to. Sur la Peinture des Anciens, servant de Supplément à l'Histoire de l'Art, par A. Riem, Berlin, 1787, 4to. Observations on the Art of Painting among the Ancients, by Cooper, in the third volume of Memoirs of the Literary and Philosophical Society of Manchester, 1790, 8vo.

Works which treat in general of the lives of painters of every age and country:—Entretiens sur les Vies et sur les Ouvrages des plus excellens Peintres, anciens et modernes, by André Felibien, Paris, 1696, 5 vols. 4to., and London, 1705, 4 vols. 8vo. The second part of the first volume of the Academia tedesca della Architettura, Scultura, e Pittura, of Sandart, Nuremberg, 1675, folio. Noms des Peintres les plus célèbres, anciens et modernes, Paris 1679, 12mo. Abrégé de la Vie des Peintres, avec des Réflexions sur leurs Ouvrages, par R. de Piles, Paris, 1747, 12mo. Abecedario Pittorico, o sia serie degli Uomini i più illustri in Pittura, Scultura, ed Architettura, da F. P. A. Orlandi, Bologna, 1704, 4to. Account of the most eminent Painters, ancient and modern, continued down to the present Times according to the Order of their Succession, by R. Graham, London, 1716, 8vo. Table historique et chronologique des plus fameux Peintres anciens et modernes, par A. F. Harms, Brunswick, 1742, folio. Dictionnaire générale des Artistes, by Fuessli, Zurich, 1767, 4to. Extraits des différens Ouvrages publiés sur la Vie des Peintres, by M. Papillon de la Ferté, Paris, 1776, 12mo. Pet. Opmerii Opus Chronogr. Orbis universi à Mundi Exordio usque ad Annum 1611, Antwerp, 1611, folio.

Works expressly on the ancient painters:—Vite de' Pittori antichi, scritte ed illustrate da Carlo Dati, 1667, 4to. Lezione detta nella Accademia della Crusca intorno a' Pittori, Greci e Latini, de Filippo Baldinucci, 1692, 4to. In the tenth edition of Junius's work entitled De Pictura Veterum (Rotterdam, 1694) there will be found an extensive catalogue of the painters and other artists of antiquity.

Respecting modern painters in general we find details in *L'Académie des Sciences et des Arts*, contenant les Vies et les Eloges des Hommes illustres, par J. Bullart, Brussels, 1695, folio. *Le Vite de' Pittori, de' Scultori, e degli Architetti moderni*, con loro Ritratti al naturale, da Giovanni Pietro Bellori, Rome, 1672, 4to. Accresciuta colla Vita e Ritratto del Car. Luc. Giardano, Rome, 1728, 4to. *Vite de' Pittori, Scultori, ed Architetti moderni*, da Liono Pascoli, Rome, 1730—6, 2 vols. 4to. (The names of all other painters, save Italian, are dreadfully mangled in this book). Portraits of the most eminent painters and other famous artists that have flourished in Europe, curiously engraved on above 100 copper plates, from original paintings of Van Dyck, Jansens, Guido, Teniers, and other celebrated masters; with an account of their Lives, Characters, and most considerable Works, London, 1739, 4to. *Abrégé de la Vie des plus fameux Peintres, avec leurs Portraits gravés en taille-douce, les Indications de leurs principaux Ouvrages, quelques Réflexions sur leurs Caractères, et la Manière de connoître les Dessins et les Tableaux des grands Maitres*, par M. A. J. Dezallier d'Argenville, Paris, 1745, 3

vols. 8vo. *The Gentleman and Connoisseur's Dictionary of Painters*, containing a complete Collection and Account of the most distinguished Artists, who have flourished in the Art of Painting in Europe from 1250 to 1767; to which is added, a Catalogue of the Disciples of the most famous Masters, &c., by Pilkington, London 1767, 4to. *Dictionnaire des Artistes*, par M l'Abbé L. A. Fontenay, Paris, 1776, 2 vols. 8vo. *Biographical Memoirs of extraordinary Painters*, exhibiting not only Sketches of their principal Works and professional Characters, but a variety of romantic Adventures and original Anecdotes, London, 1780, 12mo. *Abrégé de la Vie des Peintres, dont les Tableaux composent la Galerie Electorale de Dresde*, Dresden, 1782, 8vo. *Manuale de' Pittori*, for the Year 1792, Florence, 8vo.

Our biography will be found to contain the lives of the most distinguished painters of all ages and countries, in their alphabetical places; but the following catalogue *Raisonnée* of celebrated painters, from the revival of the art to the beginning of the last century, may be found a useful compendium to students.

| Names. | Studied under. | Painted. | Died. | Excelled in. |
|--|---|-------------------------------|-----------|--|
| Giovanni Cimabue | Certain Greeks | History | 1300 60 | First revived painting. |
| Andrea Tafi | Apollonius, a Greek | History | 1294 81 | Revived mosaic. |
| Giotti | Cimabue | History | 1336 60 | Quitted the stiff manner of the Greeks. |
| Buonamico Buffalmacco | Andrea Tafi | History | 1340 78 | |
| Ambrogio Lorenzetti | Giotto | History | 1350 83 | |
| Pietro Cavallini | Giotto | History | 1364 85 | |
| Simon Memmi | Giotto | Portraits | 1345 60 | |
| Andrea Oragna | Imitated Giotto | History | 1389 60 | |
| Tomaso Giotino | Imitated Giotto | History | 1356 32 | |
| Paolo Uccello | Antonio Venetiano | Birds, some History | 1432 83 | First who studied perspective. |
| Massolino | Lorenzo Ghiberti and Gher. Starnina | History | 1418 37 | Gave more grace to his figures and drapery. |
| Masaccio | Massolino | History | 1443 24 | |
| Fra. Giov. Angelico da Fiesole | Giotino | Hist. Miniatures | 1455 68 | |
| Antonella da Messina | John Van Eyck | History | 1475 49 | Introduced oil painting into Italy. |
| Fra. Filippo Lippi | Masaccio | History | 1488 69 | Began to paint figures larger than life. |
| Andrea del Castagno, detto Degl' Impiccati | Domenico Venetiano | History | 1480 71 | Painted in oil first at Florence. |
| Gentile del Fabriano | Giovanni da Fiesole | History | 1412 80 | |
| Giacomo Bellini | Gentile del Fabriano | History | 1470 | |
| Gentile Bellini } | { Giacomo their fa- | History | 1591 80 | |
| Giovanni Bellini } | { ther | History | 1512 90 | |
| Cosmo Rosselli | | History | 1484 68 | |
| Domenico Ghirlandaio | Alessand. Baldovinetti | History | 1493 44 | Lively coloring, genteel designing, and good airs. |
| Andrea Verocchio | Giacomo Scurcione | History | 1488 56 | Observation of perspective. |
| Andrea Mantegna | | History | 1517 66 | |
| Filippo Lippi | Fra. Phil'ippo his father, and Sandro Boticelli | History | 1505 69 | |
| Pietro Perugino | Andrea Verocchio | History | 1524 78 | |
| Bernardino Pinturicchio | Pietro Perugino | History | 1513 59 | |
| Francesco Francia | Marco Zoppo | History | 1518 68 | First considerable Master of the Bologna school. |
| Bartolomeo Ramenghi, detto Il Bagnacavallo | Francesco Francia | History | 1541 48 | Soft and fleshy coloring. |
| Innocenzo Francuzzi, detto da Imola | Francesco Francia | History | | Correct drawing. |

| Names. | Studied under. | Painted. | Died | Age | Excelled in. |
|--|---|------------------------------|-------|-----|---|
| Francesco Turbido, detto Il Mauro | Giorgione . . . | Portraits . | 1521 | 81 | |
| Luca Signorelli . . | Piet. della Francesca | History . | 1521 | 82 | |
| Lionardo da Vinci . | . . . | Hist. and Port. | 1317 | 75 | Exquisite designing. |
| Giorgio Giorgione . | Imitated Lionardo's manner | History & Portraits | 1511 | 33 | Management of the clair-obscure, and coloring. |
| Antonio da Correggio . | | History & Portraits | 1534 | 40 | Divine coloring and morbidezza of his flesh; angelical grace and joyous airs of his figures, and clair-obscure. |
| Mariotto Albertinelli . | Cosmo Roselli . | History . | 1520 | 45 | |
| Baccio, detto Fra. Bartolomeo di S. Marco | Cosmo Roselli . | History . | 1517 | 48 | |
| Pietro di Cosimo . | Cosmo Roselli . | Grotes. & monst. | 1521 | 80 | |
| Raphaellino del Garbo | Filippo Lippi . | History . | 1529 | 58 | |
| Michel Angiolo Buonarroti | Domenico Ghirlandaio | History . | 1564 | 90 | Great correctness of design, grand and terrible subjects, profound knowledge of the anatomical part. |
| Raffaello Sanzio d'Urbino | Pietro Perugino: corrected his manner upon seeing the works of Lionardo da Vinci & Michael Angelo | History & Portraits | 1520 | 37 | In every part of painting, but chiefly in the thought, composition, expression, and drawing. |
| Titiano Vecelli . . | Giovanni Bellini . | History & Portraits | 1576 | 99 | The clair-obscure and all the beauties of coloring. |
| Domenico Puligo . | Domenico Ghirlandaio | History . | 1525 | 52 | |
| Timoteo Urbino . | Raffaello . . . | History . | 1524 | 54 | The same as his master. |
| Vincenzo da San Gimignano | Raffaello . . . | History . | 1527 | 52 | |
| Lorenzo di Credi . | Andrea Verocchio, imitated Lionardo da Vinci | History . | 1530 | | |
| Balthazar Peruzzi . | . . . | Hist. buildings | 1536 | 55 | |
| Giovanni Francesco Penni, detto il Fattore | Raffaello . . . | History . | 1528 | 40 | Good imitation of his master and great despatch. |
| Giulio Romano . . | Raffaello . . . | History . | 1546 | 54 | Vivid and poetical fancy, and powerful thought. |
| Peligrino di Modena | Raffaello . . . | History . | 1538 | | |
| Pierino Buonacorvi, detto Perin del Vago | Raffaello . . . | History . | 1547 | 47 | |
| Giovanni da Udina | Raffaello . . . | Grotesques | 1564 | 70 | Animals, flowers, and fruits. |
| Andrea del Sarto . | Pietro di Cosimo . | History, Portraits | 1530 | 42 | Natural and graceful airs, and correct drawing; a bright manner of coloring. |
| Francia Bigio . . . | Mariotto Albertinelli | History . | . . . | 41 | Painted in company with and like Andrea. |
| Sebastiano, detto Fradèl Piombo | Giov. Bellini; Il Giorgione, M. Angelo | History, Portraits | 1547 | 62 | Painted in the strong and correct manner of this last, and colored better. |
| Orazio Sammachini . | Il Bagnacavallo, Innocenzo d'Imola | History . | 1577 | 45 | |
| Lorenzetto Sabattini . | The same . . . | History . | | | |
| Prospero Fontana . | The same . . . | History, Portr. | | | |
| Lavinia Fontana . . | Prospero her father | History, Portr. | 1602 | 50 | |
| Pelesirino Tibaldi . | Il Bagnacavallo, Innocenzo d'Imola | History . | 1592 | 70 | A strong Michael Angelo manner. |
| Primaticcio, detto Il Bolognese | The same; Giulio Romano | History . | 1570 | 80 | Gentleness and strenuous imagination. |
| Nicolo Bolognese, detto Messer Nicolo | Primaticcio . . . | History . | 1372 | 60 | |
| Il Dosso . . . | Lorenzo Costa, Titian | History, lands. | | | |
| Bernazzano da Milano | . . . | Animals, landscape, & fruits | 1550 | | |
| Giov. Martino da Udina | Giov. Bellini . . . | History . | 1564 | 70 | |
| Peligrino da san Danielo | The same . . . | History . | | | |
| Giov. Ant. Regillo, detto Licinio da Pordenone | Giorgione . . . | History, Portraits | 1540 | 56 | Fine coloring. |
| Girolamo de Trevigi . | . . . | Hist. buildings | 1544 | 36 | |
| Polidoro da Caravaggio | Raffaello . . . | History . | 1543 | 51 | The correctness of design and imitation of the antique chiefly in chiaro-scuro. |

| Names. | Studied under. | Painted. | Died | Age | Excelled in. |
|--|---|---------------------------------|------|-----|--|
| Il Maturino . . . | Raffaello . . . | History . . . | 1527 | 37 | The same; they always painted together. |
| Francesco Mazzuolo detto Il Parmegiano | Imitated Raffaello . . | History . . . | 1540 | 36 | Great delicacy and gentleness of drawing. |
| Girolamo Mezzuoli . . | Francesco, his cousin . . | History . . . | ... | ... | Always imitated his master. |
| Giacomo Palma, detto Il Vecchio | Titian and others . . | History, Portr. | 1596 | 48 | Warm and mellow tints. |
| Lorenzo Lotto . . . | Imitated Bellini and Giorgione | History, Portr. | 1544 | 36 | |
| Francesco Monsignori | Bellini . . . | Portraits . . | 1519 | 64 | |
| Domenico Beccafumio | Imitated Pietro Perugino | History . . . | 1549 | 65 | |
| Meccarino | Lionardo da Vinci, Al. bertinelli, Andrea del Sarto | History . . . | 1558 | 65 | |
| Giacomo Pontormo . . | Pietro Perugino . . . | History . . . | 1551 | 75 | |
| Girolamo Genga . . . | History . . . | History . . . | 1554 | ... | |
| Giov. Antonio da Verzelli, detto Il Sodoma | History . . . | History . . . | 1551 | 70 | |
| Bastiano Aristotile | Baldini, Lorenzo Costa | History . . . | 1559 | 78 | Like Raffaello. |
| Benvenuto Garofalo . | Garofalo, he imitated Coreggio | History . . . | 1556 | 55 | |
| Girolami da Carpi . . | Pellegrino Tibaldi . . | History . . . | 1571 | ... | |
| Giov. Francesco Bazzi detto Il Nosadella | The same . . . | History . . . | ... | ... | |
| Ercolo Procaccini . . | The same . . . | History . . . | ... | ... | |
| Bartolomeo } and } Passerotti } tre figli | The same . . . | History . . . | ... | ... | |
| Francesco Salviati . . | Andrea del Sarto . . . | History . . . | 1563 | 54 | |
| Giorgio Vasari . . . | The same . . . | History, Portr. | 1584 | 68 | |
| Daniel Ricciarelli, detto da Volterra | Il Sodoma; Baldassar Peruzzi | History . . . | 1566 | 57 | Strong sense of character. |
| Taddeo Zuccherò . . . | Studied Raffaello . . | History, Portr. | 1566 | 37 | |
| Frederico Zuccherò . . | History, Portr. | History, Portr. | 1609 | 66 | Painted with his brother. |
| Bartolomeo Cesi . . . | Il Nosadella . . . | History . . . | ... | 79 | |
| Dionigi Calvart . . . | Prospero Fontana . . | History . . . | 1619 | 54 | |
| John of Bruges . . . | Hubert Van Eyck . . . | History, Portr. | 1470 | ... | Said to have invented oil painting. |
| Albert Durer . . . | Hupse Martin . . . | History, Portr. | 1528 | 57 | |
| Quintin Matsys, called the Smith of Antwerp | History, Portr. | History, Portr. | 1529 | 69 | Nature, high finishing. |
| Lucas Jacob, called Luca d'Ollanda | Cornelius Engelbert | History, Portr. | 1533 | ... | |
| Peter Brueghel, called Old Brueghel . . . | Peter Koek . . . | History, Portr. | 1570 | 60 | |
| John Holben, called Hans Holben | History, Portr. | History, Portr. | 1444 | 46 | Great nature, extreme finishing. |
| Roger Vandensyde . . | John Van Eyck . . . | History . . . | ... | ... | |
| John Schorel . . . | Jacob Cornil . . . | History . . . | 1562 | 67 | |
| Matthias Cock . . . | History . . . | Landscape . . | 1465 | 65 | |
| Martin Heemskirke . . | John Schorel . . . | Droll figures . | 1754 | 76 | |
| Francois Floris, called Franco-Flore | Lambart de Liege . . | History . . . | 1570 | 50 | |
| Francesco Vecelli . . | Titian, his brother . . | Portraits . . . | 1579 | 66 | |
| Orazio Vecelli . . . | Titian, his father . . | History, Portr. | ... | ... | |
| Nadalino di Murano . . | Titian . . . | Portraits . . . | 1588 | 75 | |
| Damiano Mazza . . . | Titian . . . | History, Portr. | ... | ... | |
| Girolamo di Titiano . . | Titian . . . | History, Portr. | ... | ... | Coloring. |
| Paris Bordone . . . | Titian . . . | History, Portr. | ... | ... | |
| Andrea Schiavone . . | Titian . . . | History . . . | 1582 | 60 | |
| Alessandro Bonvincino, detto Il Moretto | Titian, imitated Raffaello | History . . . | 1564 | 50 | |
| Girolamo Romanino . . | Titian . . . | History . . . | 1567 | 63 | |
| Il Mattano . . . | Titian, Tad. Zuccherò | Landsc. Portr. | 1590 | 62 | |
| Pirro Ligorio . . . | Giulio Romano . . . | Antique monuments and buildings | 1573 | 80 | |
| Dom. Giulio Clovio . . | Giulio Romano . . . | Miniature, History | 1578 | 80 | Chaste and genteel coloring, somewhat of M. Ang. in the drawing. |
| Il Bronzino, Angelo Allori | Giacomo Pontormo . . | History, Portr. | 1580 | 69 | |
| Alessandro Allori . . | Bronzino, his uncle . . | History . . . | 1607 | 72 | |
| Giacomo Sementi . . | Dionigi Calvart . . . | History . . . | 1625 | 45 | |

| Names. | Studied under. | Painted. | Died | Age | Excelled in. |
|--|--|--|------|-----|--|
| Marcello Venusto | Perin del Vaga | History | 1576 | 61 | |
| Marco da Faenza | | History | | | |
| Girolamo da Sermonetta | Perin del Vaga | History | 1550 | 46 | |
| Battista Naldino | Il Bronzino | History | | | |
| Nicolo del Pomerancio | | History | 1626 | 75 | |
| Jean Cousin | | History | 1589 | | Commonly upon glass. |
| Michael Coxis | Van Orlay, Raffaele | History | 1592 | 95 | |
| John Bol | | Miniature, Landsc. | 1593 | 59 | |
| Peter Porbus | | | 1583 | 73 | |
| Antony More | John Schorel | Portraits, Hist. | 1575 | 56 | |
| George Hoefnaghel | | View of cities, Landscape | 1600 | | |
| Camillo Procaccini | Ercole, his father; Prospero Fontana | History | 1626 | 80 | A dark, strong, expressive manner. |
| Giulio Cesare Procaccini | Ercole, his father; Prospero Fontana | History | 1626 | 78 | A dark, strong, expressive manner. |
| Jude Indocus Van-Win-ghen | Studied in Italy | History | 1603 | 62 | |
| John Strada | Studied in Italy | Battles, Hunting | 1604 | 68 | |
| Bartholomew Spranger | | History | 1623 | 77 | |
| Michael John Miervelt | Ant. Blockland | Portraits | 1641 | 73 | |
| Paolo Cagliari, detto Paul Veronese | Antonio Badiglio | History, Portraits | 1588 | 58 | Rich and noble composition; fine warm coloring. |
| Carlo Cagliari | Paolo, his father | History, Portr. | 1596 | 26 | Imitated his father's manner. |
| Benedetto Cagliari | The same | The same | 1598 | 60 | The same. |
| Gabrielle Cagliari | The same | The same | 1631 | 63 | The same. |
| Battista Zelotti | Ant. Badiglio, worked with Paul Veronese | History, chiefly in fresco | 1592 | 60 | |
| Giacomo da Ponte, detto Il Bassano | Francesco, his father, Bonifacio Venetiano, imitated Titian. | Rustic figures, Animals, Portraits, History. | 1592 | 82 | Much nature, and fine coloring. |
| Francesco Bassano | Giacomo, his father | The same | 1594 | 84 | Imitated his father's manner, and copied his pictures. |
| Leandro Bassano | The same | The same | 1623 | 65 | The same. |
| Giambattista Bassano | The same | The same | 1613 | 60 | The same. |
| Girolamo Bassano | The same | The same | 1622 | 62 | The same. |
| Giacomo Robusti, detto Il Tintoretto | Titian, in his drawing imitated Michael Angelo | History, Portraits | 1594 | 82 | The boldness and softness of his pencil; variety and correctness of design; seldom finished. |
| Marietto Tintoretto | Tintoret, her father | Portraits | 1590 | 30 | |
| Paul Franceschi | Tintoret | Landscape | 1596 | 56 | |
| Martin de Vos | Tintoret | Landscape | 1604 | 84 | |
| John Rothenamer | Tintoret | History | 1606 | 42 | Designed after Tintoret's manner. |
| Paolo Farinato | Antonio Badiglio | History | 1606 | 84 | |
| Marco Vecelli | Titian, his uncle | | 1611 | 66 | |
| Livio Agresti | Perin del Vaga | History | 1580 | | |
| Marco da Sienna | Dan. Volterra | History | 1567 | 57 | |
| Giacomo Rocca | Dan. Volterra | History | | | |
| Frederico Barocci | Studied Raffaele | History, Portr. | 1612 | 34 | Fine genteel drawing. |
| Il Cavaliere Francesco Vanni | Fred. Baroccio | History | 1615 | 51 | Correct design and agreeable coloring. |
| Michael Angelo Amerigi, detto Il Caravaggi | Cav. Apino | History, humorous figures | 1609 | 40 | A strong and close imitation of Nature, but without choice; exquisite coloring. |
| Lodovico Caracci | Prospero Fontana | History | 1619 | 64 | Exquisite design; noble and proper composition; strong and harmonious coloring. |
| Agostino Caracci | Ludovico, his cousin, | History, Portrait, landsc. | 1602 | 44 | Similarly accomplished. |
| Annibale Caracci | Ludovico, his cousin, | History, Portraits, landsc. | 1609 | 49 | Similarly accomplished. |
| Domenico Zampieri, detto Il Domenichino | The Caracci | History, Portraits | 1641 | 60 | Correct design, strong and moving expression. |
| Guido Reni | Dionigi Calvart, the Caracci | History, Portraits | 1642 | 68 | Divine and graceful airs and attitudes, gay and lightsome coloring. |
| Cav. Giov. Lanfranco | The Caracci | History | 1647 | 66 | Great force and fulgore, chiefly in fresco. |
| Francesco Albani | Dionigi Calvart, the Caracci | History | 1660 | 82 | Genteel poetical fancy, beautiful airy coloring, his nymphs and boys are most admired. |

| Names. | Studied under. | Painted. | Died. | Excell'd in. |
|---|---------------------------------|---|------------|---|
| Lucio Massari . . . | The Caracci . . . | History . . . | 1633 64 | The furia and force of his composition. |
| Sisto Badalocchio . . . | Annibal Caracci . . . | History . . . | 1618 35 | |
| Antonio Caracci . . . | Annibal, his uncle . . . | History . . . | 1640 80 | |
| Ginseppe Pini, detto Cavalier Arpino . . . | Raffaello da Rheggio . . . | History . . . | 1640 80 | |
| Il Paduano . . . | . . . | Portraits . . . | . . . | |
| Il Cigoli . . . | Andrea del Sarto . . . | History . . . | 1613 54 | |
| Domenico Feti . . . | Cigoli . . . | History . . . | 1624 35 | |
| Cherubino Alberti . . . | . . . | History . . . | 1615 63 | |
| Cavaliere Passignano . . . | Frederic Zuccherò . . . | History . . . | 1638 80 | |
| Orazio Gentileschi . . . | Aurelio Lomi . . . | History . . . | 1647 84 | |
| Filippo d'Angeli, detto Il Napolitano . . . | . . . | Landscape . . . | 1640 40 | Worked with Paul, his brother. |
| Paul Brill . . . | After Titian and Annibale . . . | Landscape . . . | 1626 72 | |
| Mathew Brill . . . | . . . | Landscape . . . | 1584 34 | |
| Pietro Paolo Gobbo . . . | . . . | Fruit, Landsc. . . | 1640 60 | |
| Il Viola . . . | Annibal Caracci . . . | Landscape . . . | 1622 50 | |
| Roland Saveri . . . | Imitated Paul Brill . . . | Landscape . . . | 1639 63 | |
| Bartolomeo Manfredi . . . | M. Ang. Caravaggio . . . | History . . . | . . . | |
| Carlo Saracino . . . | Imitated Caravaggio . . . | History . . . | 1625 40 | |
| Il Valentino . . . | M. Ang. Caravaggio . . . | History . . . | 1632 32 | |
| Giuseppe Ribera, detto Lo Spagnuolo . . . | M. Ang. Caravaggio . . . | History . . . | 1656 67 | |
| John Mompre . . . | Studied nature . . . | Landscape . . . | . . . | A dark strong manner; dismal and cruel subjects. |
| Ben. Cornelius Wroon, or Vroon . . . | Corn. Henrickson . . . | Seaports, Ships . . . | . . . | |
| Agostino Tassi . . . | Paul Brill . . . | Ships, Tempests, Landscapes, Fruit, Perspectives. . . | . . . | |
| Fra. Matteo Zaccolino . . . | . . . | Perspective . . . | 1630 40 | |
| Antonio Tempesta . . . | John Strada . . . | Animals, Battles, Huntings . . . | 1630 75 | |
| Octavius Van Veen, called Otho Vænius . . . | . . . | History . . . | 1634 78 | |
| Jean Le Clerc . . . | Carlo Saracino . . . | History . . . | 1633 . . . | |
| Simon Vouet . . . | Laurent, his father . . . | History, Portr. . . | 1641 59 | |
| Peter Noëfs . . . | Henry Steinwick . . . | Perspective . . . | 1651 85 | |
| Henry Steinwick . . . | John De Vries . . . | Buildings, Places illuminated by fire and candles . . . | 1603 53 | |
| Theodore Rombouts . . . | Abraham Jansens . . . | Low life . . . | 1640 43 | Great skill and beauty in his particular walk of art. |
| Gerard Segres . . . | Abraham Jansens . . . | . . . | 1651 62 | |
| Sir Peter Paul Rubens . . . | Otho Vænius . . . | History, Portraits, Landscape . . . | 1641 63 | |
| Sir Antony Vanduyck . . . | Rubens . . . | Portraits, History . . . | 1641 42 | |
| Rembrandt . . . | . . . | History, Portraits, Low-life . . . | 1674 68 | |
| Cornelius Polembourg . . . | Abraham Bloemart . . . | Miniature, Landscape, with figures . . . | 1660 74 | |
| John Brueghel, called Velvet Brueghel . . . | Old Brueghel, his father . . . | Little Landsc. with figures, animals, and flowers . . . | 1625 65 | |
| Moses, called the Little . . . | Corn. Polembourg . . . | Small Landsc. with figures . . . | 1650 . . . | |
| F. Dan Legres . . . | Young Brueghel . . . | Flowers . . . | 1666 70 | |
| Gasper Craes . . . | Coxis . . . | . . . | 1669 84 | |
| Bartholomew Briemberg . . . | Studied at Rome . . . | Landscape . . . | 1660 40 | Very finished execution. |
| John Asselyn, called Little John . . . | Esaias Vander Velde . . . | Landscape . . . | 1660 50 | |

| Names. | Studied under. | Painted. | Died | Age | Excelled in. |
|--|--------------------------------|---|------|-----|---|
| Francis Snyders | Painted with Rubens | Animals, dead and alive | 1657 | 78 | Great truth and brilliant execution. |
| Ert Veest | | Seafights, Tempests | 1670 | | |
| Lewis Cousin | | | 1670 | | |
| Philip Vauvremans | John Wynants | | 1668 | 48 | |
| Gérard Dow | Rembrandt | Little figures | 1474 | 61 | |
| Pietro Francesco Mola | Albani, Cav. Arpino | History | 1666 | 56 | Strong painting. |
| Giov. Battista Mola | Albani | Hist. Landsc. | | | The same. |
| Giacomo Cavedone | Ludov. Caracci | History | 1660 | 80 | |
| Agostino Metelli | | Buildings, Perspective | 1660 | 51 | |
| Angelo Michael Colona | Ferrantino | Buildings, Hist. | 1687 | 87 | |
| Giov. Benedetto Castiglione, detto Il Genovese | Paggi, Vandyck | | | | |
| Pietro Testa | Domenichino | History, Whims | 1650 | 39 | Capricious and strange designs. |
| Matthew Platten, called Il Montagna | Asselyn | Sea-pieces | | | |
| Francesco Barbieri, detto Il Guercino da Cento | The Caracci | History | 1667 | 76 | A medium between the Caracci and Caravaggio; he has two manners, one a dark and strong one; the other more gay and gracious. |
| Pietro Berrettini, detto Pietro da Cortona | Baccio Ciampi | History | 1669 | 73 | Noble compositions; bright and beautiful coloring. |
| Antonino Barbalonga | Domenichino | History | | | |
| Andrea Camaceo | Domenichino | History | 1657 | 55 | |
| Andrea Sacchi | Albani | History | 1661 | 72 | A coloring more languid than Pietro Cortona, but extremely delicate and pleasing. |
| Simone Cantarini | Guido | History | 1648 | 36 | |
| Cav. Carlo Cignani | Albani | History | 1719 | 91 | Noble, bold manner and bright coloring. |
| Pietro Facini | Annibal Caracci | History | 1602 | 42 | |
| Giov. Andrea Donducci, detto Il Masteletta | The Caracci | History | 1655 | 80 | |
| Alessandro Tiarini | Prospero Fontana | History | 1668 | 91 | |
| Leonella Spado | The Caracci | History | 1622 | 46 | |
| Giov. Andrea Sirani | Guido | History | 1670 | 60 | |
| Elisabetta Sirani | Andrea, her father | History, Portr. | 1664 | 26 | |
| Giacomo Sementi | Guido | History | 1625 | 45 | |
| Francesco Gessi | Guido | History | | | Good imitation of his master. |
| Lorenzo Garbieri | Lud. Caracci | History | 1654 | 64 | |
| G. Francesco Romanelli | Pietro Cortona | History | 1662 | 45 | |
| Diego Velasquez | Francesco Pacheco | Portraits | 1660 | 66 | Great fire and force. |
| Alessandro Veronese | Felice Riccio | History | 1670 | 70 | A weak but agreeable manner. |
| Mario de Fiori | | Flowers | 1656 | | |
| Michelangelo del Campidoglio | Fioravante | Flowers and fruits | 1670 | 60 | |
| Salvator Rosa | Spagnuletto and Daniel Falcone | Landscape, history | 1673 | 59 | Savage and uncouth places: very great and noble style; stories that have something of horror or cruelty. |
| Il Cav. Calabrese | Guercino | History | 1688 | 86 | |
| Fer. amola Fioverenti. | | Vases, instruments, carpets, & still-life | 1512 | | |
| Il Maltese | | The same | | | |
| Claude Gelee, called Claude Lorraine | Godfrey Wals; Agostino Tassi | Landscape | 1682 | 82 | Rural and pleasing scenes, with various accidents of nature, as gleams of sunshine, the rising moon, &c. |
| Nicholas Poussin | Quintin Varin | History, landscape | 1665 | 71 | Exquisite knowledge of the antique; fine expression; skilful and well chosen composition and design. Scenes of the country, with ancient buildings and historical figures intermixed. |
| Gaspur du Ghet, called Gaspar Poussin | Nicholas, his brother-in-law | Landscape | 1665 | | A mixture of Nicholas's and Claude Lorraine's styles. |
| Eustache Le Sueur | Simon Vouet | History | 1665 | 38 | Simplicity, dignity, and correctness of style; he is called the French Raffaele. |

| Names. | Studied under. | Painted. | Died | $\frac{6}{4}$ | Excelled in. |
|------------------------------|------------------------------|---------------------|------|---------------|---------------------------------|
| Michelangelo delle Battaglie | Mozzo of Antwerp | Battles | . | | |
| Jacques Stella | His father | History, miniatures | 1647 | 51 | Painted upon marble frequently. |
| Carlo Maratti | Andrea Sacchi | History | 1713 | 88 | |
| Luca Giordana | Lo Spagnoletto | History | 1705 | 76 | |
| Charles Le Brun | Simon Vouet; Nicolas Poussin | History | 1690 | 71 | |
| Cav. Giacinto Brandi | Lanfranco | History | 1713 | 90 | |
| Ciro Ferri | Pietro Cortona | History | 1689 | 55 | |

PAINTS. See COLOR-MAKING.

PAIR, *n.s.*, *v.n.* & *v.a.* Fr. *pair*; Lat. *par*, equal. Two things alike, of a sort, or suitable to each other; a couple; brace; hence a married couple: to be joined in pairs or coupled; to suit; fit: as an active verb, to join in couples; unite as corresponding or as a remarkable contrast.

Our dance, I pray;

Your hand, my Perdita; so turtles pair.

Shakespeare.

Had our prince seen the hour, he had paired
Well with this lord; there was not a full month
Between their births. *Id. Winter's Tale.*

All his lovely looks, his pleasing fires,
All his sweet motions, all his taking smiles,
He does into one pair of eyes convey. *Suckling.*

O when meet now

Such pairs in love and mutual honour joined?

Milton.

Baucis and Philemon there

Had lived long married and a happy pair;

Now old in love. *Dryden.*

Minds are so hardly matched, that ev'n the first,
Though paired by heaven, in Paradise were cursed.

Id.

The many pairs of nerves, branching themselves to
all the parts of the body, are wonderful to behold.

Ray.

Ethelinda!

My heart was made to fit and pair with thine,
Simple and plain, and fraught with artless tenderness.

Rowe.

Turtles and doves with differing hues unite,
And glossy jet is paired with shining white. *Pope.*

Their sentiment, so well expressed,

Influenced mightily the rest;

All paired, and each pair built a nest. *Cowper.*

Ah sure a pair was never seen,

So justly formed to meet by nature!

The youth excelling so in mien,

The maid in every grace of feature.

Sheridan.

PAIRING, in zoology, the union of animals in couples for the purpose of rearing their young. All wild birds pair; but with a remarkable difference between such as place their nests on trees and such as place them on the ground. The young of the former, being hatched blind and without feathers, require the nursing care of both parents till they are able to fly. The male feeds his mate on the nest, and cheers her with a song. As soon as the young are hatched, singing yields to a more necessary occupation, that of providing food for a numerous issue; a task that employs both parents. Eagles, and other birds of prey, build on trees, or on other inaccessible spots. They not only pair, but con-

tinue in pairs all the year round; and the same pair procreates year after year. This at least is the case with the eagles: the male and female hunt together, unless during incubation, at which time the female is fed by the male. A greater number than a single pair are never seen in company. Gregarious birds pair, probably to prevent discord in a society confined to a narrow space. This is the case particularly with pigeons and rooks. The male and female sit on the eggs alternately, and divide the care of feeding their young. Eider ducks pair like other birds that place their nests on the ground; and the female finishes her nest with down, plucked from her own breast. If the nest is destroyed for the down, which is remarkably warm and elastic, she makes another nest as before. If she is robbed a second time, she makes a third nest; but the male furnishes the down. The black game never pair: in spring, the cock, on an eminence, crows and claps his wings; and the females within hearing resort to him. Pairing birds, excepting those of prey, flock together in February to choose their mates. They soon disperse; and are not seen afterwards but in pairs. Pairing is unknown to quadrupeds that feed on grass. To such it would be useless; as the female gives suck to her young while she herself is feeding. Beasts of prey, such as lions, tigers, wolves, pair not. The female is left to shift for herself and for her young; which is a laborious task, and often so unsuccessful as to shorten the lives of many of them. Pairing is essential to birds of prey, because incubation leaves the female no sufficient time to hunt for food. Pairing is not necessary to beasts of prey, because their young can bear a long fast. Among animals that pair not, males fight desperately for a female. The beavers, with respect to pairing, resemble birds that place their nests on the ground. As soon as the young are produced, the males abandon their stock of food to their mates and live at large; but return frequently to visit them while they are suckling their young. Hedgehogs pair, as well as several of the monkey kind. We are not well acquainted with the natural history of these animals; but it would appear that the young require the nursing care of both parents. Seals have a singular economy. Polygamy seems to be a law of nature among them, as a male associates with several females. The sea turtles have no occasion to pair, as the female performs her task at once, by laying her eggs in the sand. The young are hatched by the sun, and immediately crawl to the sea.

PAISLEY, a town of Scotland in Renfrewshire, about six miles and a half west of Glasgow, on the river White Cart, over which there are two stone bridges of two arches each, and one of three. The town is very ancient; but was of much less consequence formerly than at present. The name Paisley is supposed to be derived from the Gaelic Pais-licht, i. e. the brow or face of a rock, which was the situation of its old church in 1160. It was erected into a burgh of barony by James IV. in 1488, when its importance seems to have been derived from its rich monastery. Even in the beginning of the eighteenth century it was but an inconsiderable place; consisting only of one street, about half a mile in length, with several lanes; whereas now it appears to be one of the largest and most populous towns in Scotland. Its buildings are elegant; its streets are well paved; and connected with one another, where the river intervenes, by three bridges. It is governed by three bailies, of whom the eldest is commonly in the commission of the peace, a treasurer, a town-clerk, and seventeen counsellors, who are annually elected about Michaelmas. It enjoys the powers of government and police, without the usual burdens of royal boroughs. The old part of the town runs from east to west upon the south slope of a ridge of hills, from which there is a fine prospect of Glasgow and the adjacent country; but on the south the view terminates in a ridge of green hills, about two miles distant. It is full a mile long, and nearly as broad. On the east side of the Cart stands the new town, which was feued off by the earl of Abercorn, and is now a large and populous place. The streets are laid off in a regular manner, but not in right angles. Many of them bear evidence of the industry of the people from their names, as Silk Street, Cotton Street, Lawn Street, &c. Here the earl of Abercorn built one of the largest and most elegant inns in Scotland, and several market-places. The town of Paisley continued a part of the abbey parish till 1738; when, the magistrates and council having purchased the patronage from the then earl of Dundonald, a new church was built, and the town was erected into a separate parish. This, called the Laigh Church, is built in the form of a Greek cross, very well laid out, and contains a great number of people. In 1756 another church was built, ornamented with a lofty spire, visible at a great distance. This is called the High Church, and is a very fine building; it is an oblong square of eighty-two feet by sixty-two, built of free-stone, with rustic corners and an elegant stone cornice. The roof is a pavilion covered with slate, having a platform covered with lead. In 1781 the Middle Church was built, and very elegantly finished; and in 1782 the town was divided into three parishes, named from their churches. There are six churches for the established religion, one each for the Episcopalians, Roman Catholics, Secession, Cameronians, and Methodists, two for the communion of relief, and two for the Independents. In addition to these, numerous other religious sects have their separate places of worship. The town-house is a very handsome

building of cut stone, with a tall spire and a clock. The flesh-market has an elegant front of cut stone, and is one of the most commodious in Britain. The poor's house is a large building, very well laid out, and stands opposite to the quay, in a fine free air. It is supported by a small tax. A philosophical society, the members of which are rather numerous, and hold weekly meetings in their hall during the winter season, has long existed. A taste for reading is also general among the manufacturing classes, in proof of which it may be mentioned, that besides what is called the trades' library, which forms indeed a third public one, many book societies have been formed; and numerous reading-rooms are supported by operatives only. Paisley is now one of the first manufacturing towns in Scotland, and is greatly celebrated on account of its manufactory of silk gauze. About the beginning of the last century the manufactures consisted principally of muslins, coarse linens, and handkerchiefs, which were afterwards succeeded by those of lawn and gauze, and a species of thread called ounce, or white thread, from Holland. In 1812 it was computed that 350,000 spindles of linen yarn, made into thread, were annually produced; this branch of trade has, however, greatly declined, and has been succeeded by the manufacture of wire or cotton thread. The lawn and linen gauze manufactures have also given way to other branches of industry. About the year 1760 the silk manufacture was introduced, and succeeded beyond expectation; but, in 1816, it had so much declined as not to employ more than a dozen looms. Since that period the silk trade, and also the fancy muslin branch, have rapidly increased, and, with the cotton manufactures, have been carried on to an extent before unknown, by the powerful aid of steam-engines, and other machinery. Shawls, both of silk and cotton, and also of silk mixed with Merino wool, are extensively manufactured here, under the names of scarfs, plaids, and shawls. It is difficult to give an exact account of the state of its manufactures at present. Besides the principal manufactures, there are four considerable tan-works, two soap and candle works, a manufacture of ribands, and another of inkle or tape. The Cart runs from south to north, and falls into the Clyde, after it has joined the conflux of the Gryfe and Black Cart at Inchinnan bridge, three miles below the town. At spring tides vessels of forty tons burden come up to the quay. The communication by water is of great importance to the inhabitants; for in this way they are served with fish of different kinds, and send their goods and manufactures to Port Glasgow, Greenock, and Glasgow; and by the great canal they have also a communication with the Frith of Forth. The trade of the town is considerably augmented by improving the navigation of the river Cart, by removing some rocks and shoals; and as the channel was but shallow under Inchinnan bridge, a navigable canal was constructed, which leaves the river a little above, and joins it a little below bridge. The Ardrossan canal also skirts the town, and is, in one place, formed into a basin, where there is an

excellent wharf. Paisley has fairs in August and November, and lies twenty-two miles north of Ayr.

In the adjoining parish there are five coal mines. Free-stone, granite, and lime-stone abound; and fossil marine shells are found in the lime quarries, as well as corals and shells in the coal mines. The ancient abbey church, which gives name to the parish, stands a short way south of the inn of Paisley, and was the only one which Paisley formerly required. This church was anciently a most noble building, and consisted of several distinct and separate places of worship; the relics of this magnificent Gothic structure are worthy the notice of the antiquarian. Only the chancel now remains, which is divided into a middle and two side aisles; all very lofty pillars, with Gothic arches; above these is another range of pillars much larger, being the segment of a circle, and above a row of arched niches from end to end, over which the roof ends in a sharp point. The outside of the building is decorated with a profusion of ornaments, especially the great west and north doors, than which scarcely any thing lighter or richer can be imagined. Close by the abbey church is the earl of Abercorn's burial-place. It is a vaulted Gothic chapel, without pulpit or pew, but has the finest echo perhaps in the world. In this chapel is the monument of Marjory Bruce, daughter of Robert Bruce, wife of Walter, great steward of Scotland, and mother of Robert II.; and in it were interred Elizabeth Muir and Euphemia Ross, consorts to Robert II. The abbey of Paisley was founded as a priory for monks of the order of Clugni, about 1160, by Walter, great steward of Scotland. It was afterwards raised to an abbacy; and its lands were by Robert II. erected into a regality, under an abbot. After the Reformation, the abbacy was secularised by the pope in favor of lord Claud Hamilton, son of the duke of Chatelherault: and, in 1588, it was erected into a temporal lordship, and lord Claud was created lord Paisley. Its revenues were very considerable; consisting of the tithes of twenty-eight parishes, with the property of several lordships. But in 1653 lord Claud's grandson, James earl of Abercorn, sold the lordship to the earl of Angus, who in 1654 sold it to William lord Cochran. Great part of it was since sold off by the family of Dundonald; and what remained was, in 1764, re-purchased by the late earl of Abercorn. The fabric of the abbey owed much of its magnificence to abbot George Schaw, who, about 1484, enlarged and beautified the building, gardens, &c. He built the refectory and other offices necessary for the monks, the church and the precinct of the convent; and enclosed the gardens and orchards by a wall of hewn stone, which measured about a mile in circuit. This wall, observes Mr. Pennant (Tour in Scotland), 'is a very noble and extensive one, and indicates the ancient grandeur of the place.' On a stone at the north-west corner is this very singular inscription:—

Thy call it the Abbot George of Shaw
About my Abbey gart mak this waw;

An hundred four hundredth zeir
Eighty-four the date, but weir
Pray for his salvtie
That laid this noble foundation.

The spinning of cotton was introduced into the abbey parish in 1783. The principal seat of that manufactory is at Johnstoun, a neat and regularly built village about three miles west from Paisley. There is also in the neighbourhood of Paisley a calico printing work and a copperas work. The bleaching business in the abbey parish is carried on to a very considerable extent. The distillery business is carried on to a great extent, and the spirit manufactured in great perfection. A considerable quantity of it is exported.

PAISLEY, BLACK BOOK OF, in literary history, an ancient chronicle, often quoted 'in Scottish history, containing a record of public affairs and remarkable events, kept by the monks, who resided in the monastery. It agreed in every material fact with the Scoti-chronicon of Fordun.

PAKFONG. The name given to the white copper of the Chinese, said to be an alloy of copper, nickel, and zinc; in sixteen parts of which there are seven of zinc, two and a half of copper, and six and a half of nickel. The combination of zinc and nickel simply does not succeed.

PALACE, *n. s.* } *Fr. palais*; *Lat. palatium.*

PALACIOUS, *adj.* } (From a residence of the Cæsars. See below.) A royal abode; the abode of any sovereign or superior person; a splendid or magnificent abode: the adjective we only find used by Graunt.

This Cambuscan, of which I have you told,
In regal vestiments sit on his deis,
With diademe ful high in his *palais*. *Chaucer.*
You forgot,

We with colours spread,
Marched through the city to the *palace* gates. *Shakspeare.*

Palaces and pyramids do slope
Their heads to their foundations. *Id.*
The *palace* yard is filled with floating tides,
And the last comers bear the former to the sides. *Dryden.*

London encreases daily, turning of great *palacious*
houses into small tenements. *Graunt.*

The sun's bright *palace* on high columns raised
With burning gold and flaming jewels blazed. *Addison.*

The old man early rose, walked forth and sate
On polished stone before his *palace* gate. *Pope.*

At once is lost the pride of awful state,
The golden canopy, the glittering plate,
The regal *palace*, the luxurious board,
The liveried army, and the menial lord. *Johnson.*
From scenes like these old Scotia's grandeur springs,
That makes her loved at home, revered abroad:
Princes and lords are but the breath of kings,
'An honest man's the noblest work of God.'
And certes, in fair virtue's heavenly road,
The cottage leaves the *palace* far behind. *Burns.*

In such a *palace* Aristeus found
Cyrene when he bore the plaintive tale
Of his lost bees to her maternal ear;
In such a *palace* poetry might place
The armory of winter. *Cowper.*

ARN. To the *palace*
Colonna, as I told you!
CÆS. Oh! I know
My way through Rome. *Beyron.*

PALACE, in architecture, the term generally applied to the dwelling-houses of kings and princes. There has been much difference of opinion as to the derivation of the Latin word *palatium*. Procopius derives it from a Grecian called *Pallos*, who gave his own name to a splendid house which he had built, adding, that after him the emperor Augustus applied the name *palatium* to the house of the Roman emperors on the hill called the *Palatine*. On the other hand, it has been contended that the house of *Romulus*, in which Augustus lived, was properly called *palatium*, because situated on the *Palatine hill*. However this be, *palatium*, at first doubtless a proper name, became at length, not 'like *homo*, common to all men,' but, in a similar way, common to all the habitations of sovereigns. Neither is it restricted to these: for, taking different additions according to the quality of the inhabitants, we speak of imperial palace, royal, pontifical, cardinal, ducal, episcopal, &c. Nay, it is customary in China to build palaces in honor of celebrated ancestors: and, in the year 1263, *Hu-pi-lay*, of the Mogul empire (the first who borrowed the Chinese customs), built one for his ancestors.

In the Ancient Universal History we have an account of a most magnificent palace in Upper Egypt, not far from *Aswan* (the ancient *Syene*), the ruins whereof are so extensive as to impress the mind of the spectator with amazement. It is as large as a little city, having four avenues of columns leading to as many porticoes. At each gate, between two pillars of porphyry, stand two gigantic figures of fine black marble armed with maces. The avenues consist of columns set three and three together, in a triangle, on one pedestal: on the chapter of each triangle is placed a sphinx and a tomb alternately. Each column is seventy feet high, all of one stone.

Homer gives us details with regard to the construction of the palaces of the kings in the heroic ages. These descriptions are to be taken with a great deal of reservation. They are, most likely, in part ideal, in part embellished, and possibly taken from edifices erected long after the reputed era of the siege of *Troy*. At all events they are curious, even as affording an evidence of the notions entertained by the illustrious old Grecian on the subject. In the sixth book of the *Iliad*, the palace of *Priam* is represented as a vast edifice, the lower part of which was composed of porticoes of stone and covered galleries, beneath which were fifty chambers richly decorated for the fifty sons of *Priam*. In front of this edifice, and in the middle of the court-yard, stood another of stone, in which were twelve beautiful rooms for the daughters of *Priam*. *Paris*, who is represented as a prince possessing himself some knowledge of architecture, brought to *Troy* several architects to build him a palace. This was situated between those of *Priam* and *Hector*, and like those included many apartments.

In the earliest periods of their history, the Romans applied the word *domus*, not only to ordinary houses, but also to the habitations of the great, and even to those of their sovereigns. Even in the time of the voluptuous madman,

Nero, the celebrated new palace built by him was denominated *domus aurea Neronis*, *Nero's golden house*. This sumptuous palace surpassed in profuse splendor, as well as in dimensions, all which either had preceded or have succeeded it. According to *Suetonius*, the court in which was the colossal statue of *Nero* was adorned with three ranges of porticoes, each a mile in length. The gardens attached to the palace were also of a prodigious size, and contained a sort of pond or lake, which *Suetonius* states might be said to resemble a sea, and on the banks of which stood clusters of elegant buildings, each like a little town. The imperial portion of the building was embellished with unheard-of magnificence. Gold, jewels, and other articles of value were lavished around with an unsparing hand, while the essences and perfumes fuming up on all sides bore testimony to the effeminate luxury of this rival of *Sardanapalus*. The whole of this surpassing structure has been demolished centuries since, and it would be well for the outraged feelings of humanity if the infamy of its wretched owner had passed away with the walls he constructed.

PALÆMON (*Quintus Rhemmius*), a celebrated grammarian of Rome, in the reign of *Tiberius*. He was the son of a slave at Vienna, and was first bred up a weaver: but, attending his master's son to school, he acquired so much learning, that he obtained his freedom and became a teacher at Rome. He gained great reputation as a rhetorician and a poet; but his morals were loose, and his income, though large, was not sufficient to support his continued debaucheries. His arrogance was so great, that he used to say 'that letters were born and would die with him.' We have only some fragments of his works.

PALÆOLOGUS (*Michael*). See *ROME*.

PALÆPHATUS, an ancient Greek philosopher, who flourished between the times of *Aristotle* and *Augustus*, but whose precise age is uncertain. He wrote five books *De Incredibilibus*, of which the first only is extant. In it he attempts to explain the fables of mythology by historical facts. The best edition is that of *J. Fred. Fischer*, 8vo. Leips. 1773.

PALÆPOLIS, an ancient town of Italy, in Campania, built by a Grecian colony, on the spot where *Naples* was afterwards erected.

PALÆSTRA, in Grecian antiquity, a public building where the youth exercised themselves in wrestling, running, playing at quoits, &c. To prevent the combatants from hurting themselves by falling, the bottom of the *palæstra* was thickly covered with sand.

Barthelemi's Anacharsis furnishes us with the following account:—The *palæstræ* are nearly of the same form with the *gymnasia*. We visited the apartments appropriated to all the species of baths; those where the wrestlers leave their clothes, when they rub their bodies with oil to render their limbs supple, and where they roll themselves in the sand in order to give their antagonists a hold.

'Wrestling, leaping, tennis, and all the exercises of the *Lyceum*, were here repeated before us with greater varieties, and with more strength

and skill on the part of the performers. Among the different groups before us we distinguished men of the most perfect beauty, and worthy of serving as models for artists: some with vigorous and boldly-marked outlines, as Hercules is represented; and others of a more slim and elegant shape, consistent with the description of Achilles.

PALAFIX (Juan de), a learned Spaniard, born in Arragon, in 1600. He studied at Salamanca; and was a member of council of the Indies; bishop of Angelopolis, and of Osma, and judge of the Indies. He wrote on various subjects and died in 1659.

PALAMBAM, or **PALEMBANG**, a river of Sumatra, rises near the west coast of the island, about a day's journey from Bencoolen, and empties itself by several branches into the strait of Banca; the land near its mouth is low and swampy, the breadth up to the Dutch factory, a distance of fourteen leagues, is nearly a mile, and it has depth for vessels of fourteen feet draft. The Dutch establishment in 1777 (and it does not appear to have been since increased) consisted of 115 Europeans, of whom about thirty were officers, civil and military. The Malay town of Palembang is the most considerable of Sumatra; it is sixty miles up the river, along both banks of which it extends for eight miles, besides a number of floating habitations on the river. The houses, are like those of the Malays in general, of wood and bamboo raised on posts. The sultan's palace is a large lofty building, surrounded by a high wall, and near it is the grand mosque, which appears to have been built by a European, having pilasters and a cupola, and glazed windows. Two forts mounting heavy cannon protect the town. Besides Malays, a great many strangers are settled at Palembang, principally Chinese, Cochinchinese, and Siamese. See **SUMATRA**.

In 1812 the kingdom of Palembang was conquered by a handful of British troops under the orders of colonel Gillespie. The sultan, who had made himself universally odious by his cruelties, and by his unprovoked massacre of the Europeans resident in his capital, was dethroned, and his brother raised to the throne. The expedition which achieved this conquest set sail from Batavia on the 20th of March. After they arrived in the river of Palembang, being retarded by various obstacles in their ascent to the capital, and learning that the sultan, on hearing of the approach of the British, had fled, and that his adherents were resolved on an indiscriminate massacre of all the wealthy Chinese and other merchants, which was to take place that night, colonel Gillespie, with a small party of about seventeen British grenadiers, and a determined band of officers, hastened to the capital, and forced their way into the palace, which was partly in flames, and of which the floors and pavements were covered with the blood of the wretched victims who had been lately massacred. Here they fortified themselves, and held possession of it until the remaining troops arrived; after which the sultan was formally dethroned.

PALAMEDEA, in ornithology, a genus

belonging to the order of grallæ. The character of this genus, according to Latham, is, the bill bends down at the point, with a horn, or with a tuft of feathers erect near the base of it; the nostrils are oval; the toes are divided almost to their origin, with a small membrane between the bottoms of each. There are two species:—

1. *P. cornuta*, the horned screamer. It is about the size of a turkey; in length about three feet four inches. The bill is two inches and a quarter long, and black; the upper mandible is a little gibbous at the base, the under shuts beneath it as in the gallinaceous tribe; the nostrils are oval and pervious, and placed near the middle of the bill. From the crown of the head springs a slender horn of more than three inches in length and pointed at the end; the irides are the color of gold; the plumage on the head, neck, and upper part of the body, is black, margined with gray on the first and downy; some of the feathers round the neck are likewise edged with the same; the under parts of the wings are pale rufous, appearing on the shoulders and edges of them when closed; at the bend of the wing are two strong, sharp, horny, yellow spurs, one above another, the uppermost an inch and a half in length; the belly, thighs, and vent, are white; the tail is eight inches and a half long; the legs are stout and dusky; the fore claws are moderately bent; the hind one is nearly straight, not unlike that of a lark, and is about an inch long. These birds are always met with in pairs. They frequent places near the water; make a large nest of mud, in the shape of an oven, upon the ground; and lay two eggs, the size of those of a goose. Bajon says they make nests in thickets and among rushes. Fermun says they build in high trees. The young are brought up in the nest till able to shift for themselves. They have but one nest in the year, which is in January or February, except the first eggs are taken away, when they make a second in April or May. The young birds are frequently eaten by the natives, though the color of the flesh is very dark; that of the old ones is tough and ill-tasted. This species is said to feed on crabs and birds, as pigeons and poultry, and even to attack sheep and goats; but others say its principal food is reptiles. This species is rare. It is found in Cayenne, Guiana, Surinam, and other parts of America, chiefly in the marshes and wet savannahs, and for the most part near the sea. These seem to be the birds mentioned by Ulloa, called by the inhabitants of Quito desperadores, or awakens, from their giving notice to others of the approach of danger; as on hearing the least noise, or seeing any one, though at a great distance, they rise from the ground and make a loud chattering like a magpie, continuing the noise, and hovering over the object which caused the alarm, whereby the rest of the birds, taking the hint, are able in time to escape the impending danger. This screaming noise, which some authors relate as being exceedingly loud and terrible, occasioned Pennant to give the genus the name annexed to it.

2. *P. cristata*, the crested screamer. This bird is about the size of a heron; the bill is short, bent like that of a bird of prey, and of a yellow-

ish brown; the irides are gold colored; on the forehead, just above the bill, is a tuft of black feathers, variegated with ash-color; the head, neck, and body are gray, mixed with rufous and brown, most inclining to the last on the wings and tail: the wings are not furnished with spurs; the legs pretty long, of a dull yellow; claws brown; the hind toe placed high up, so as not to touch the ground in walking. This species inhabits Brasil. Linné makes it to belong to the screamer genus, perhaps from its cry; for it is said to be heard at a great distance, and is not unlike that of a hen turkey. None of our later writers seem to have seen it. It is said to feed on the same food as the heron tribe; the flesh is good, and the bird by some kept tame.

PALAMEDES, a Greek chief, son of Nauplius, king of Eubœa, by Clymene. He was sent by the Grecian princes who were going to the Trojan war to bring Ulysses to the camp, and prevailed; but at the expense of the inveterate hatred of the latter, who forged a letter, which appeared to prove Palamedes a traitor, and he was accordingly stoned to death. Homer is silent about the fate of Palamedes; and Pausanias mentions, that it had been reported by some that Ulysses and Diomedes had drowned him in the sea as he was fishing on the coast. Philostratus adds, that Achilles and Ajax buried his body with great pomp on the sea-shore, and that they raised upon it a small chapel, where sacrifices were regularly offered by the inhabitants of Troas. Palamedes was a man of learning as well as a soldier; and according to some he completed the alphabet of Cadmus, by the addition of the four letters, θ , ξ , χ , ϕ , during the Trojan war. To him also is attributed the invention of dice and backgammon; and it is said that he was the first who regularly ranged an army in a line of battle, and who placed sentinels round the camp, and excited their vigilance and attention by giving them a watchword. He is also famed for his skill in physic.

PALAMOW, a jungly and mountainous district of the province of Bahar, Bengal, situated between 23° and 25° of N. lat. On the north it is bounded by Rhotas, on the south and west by different wild districts in the province of Gundwana; and on the east by Ramgur. This is one of the least cultivated and most thinly inhabited parts of the East India Company's dominions; but the soil in many parts is strongly impregnated with iron. The principal towns are Palamow and Jaynagar; there are no rivers of any considerable size.

PALANQUIN, *n. s.* Hindos. *palkee*. An eastern litter or covered carriage borne by slaves.

PALARIA, among the Romans, a kind of exercise performed at a stake by the soldiers. The stake being fixed in the ground, and six feet high above it, the young undisciplined soldiers advanced against it, armed with a hurdle and cudgel, instead of a sword and shield, and went through all the rules of attack and defence, as if actually engaged with an adversary. Sometimes they stood at a distance, and attacked with missile weapons; at the same time using all the

requisite motions for defending themselves, and warding off what might be thrown against them.

PALATE, *n. s.* } Lat. *palatum*. The seat
PAL'ATABLE, *adj.* } of the taste; the roof of
PALAT'IC. } the mouth: hence mental
 taste or relish: palatable is pleasing to the taste; grateful, and, in familiar language, admissible. bearable: palatic, an obsolete adjective, signifying belonging to the palate.

It may be the *palate* of the soul is indisposed by listlessness or sorrow.

The men of nice *palates* could not relish Aristotle, as drest up by the schoolmen. *Baker on Learning.*

Let their beds

Be made as soft as yours, and let their *palates*

Be seasoned with such viands. *Shakspeare.*

These ivory feet were carved into the shape of lions; without these their greatest dainties could not relish to their *palates*. *Hakewill on Providence.*

The three labials, P. B. M. are parallel to the three gingival T. D. N. and to the three *palatich* K. O. L.

Holder.

Light and colours come in only by the eyes; all kind of sounds only by the ears; the several tastes and smells by the nose and *palate*.

Locke.

There is nothing so difficult as the art of making advice agreeable. How many devices have been made use of to render this bitter potion *palatable*!

Addison.

By nerves about our *palate* placed,

She likewise judges of the taste:

Else, dismal thought! our warlike men

Might drink thick port for fine champagne. *Prior.*

The vulgar boil, the learned roast an egg;

Hard task to hit the *palate* of such guests. *Pope.*

They by the alluring odour drawn in baste,

Fly to the dulcet cates, and crowding sip

Their *palatable* bane. *Philips.*

The **PALATE**, in anatomy, is the flesh that composes the roof, or the upper and inner part of the mouth. It has much the same structure with the gums; but it has a great number of glands, discovered so early as the time of Fallopius; these are principally situated in the hinder part near the uvula, where it is pendulous, in the manner of a curtain, which part is called *velum*, or *claustrum palati*. The glands situated particularly in this part secrete a mucous fluid, serving to lubricate the mouth and throat, and to facilitate deglutition; they have a great number of apertures for the discharge of this humor into the mouth. The great uses of this membrane are to defend the bones of the palate, and to prevent, by its *claustrum* or *velum*, any thing attempted to be swallowed from getting up into the nostrils.

PALATI, a Latin historian of Venice, who flourished in the seventeenth century. His chief work is, *Monarchia Occidentalis, sive Aquila Interlilia, et Aquila Saxonica*.

PALATINATE, *n. s.* } Lat. *palatinatus*.

PAL'ATINE, *n. s. & adj.* } The seat of a count palatine, or chief officer in the court of a sovereign prince: a palatine is one invested with regal rights and prerogatives; and as an adjective signifies possessing royal privileges.

Many of those lords, to whom our kings had granted those petty kingdoms, did exercise *jura regalia*, inasmuch as there were no eight counties *palatine* in Ireland at one time. *Davies.*

These absolute *palatines*, made barons and knights, and exercised high justice in all points within their territories. *Id.*

PALATINATE, LOWER, or the PALATINATE OF THE RHINE, is a fertile province of Germany, situated chiefly on the west side of the Rhine, having Mentz on the north, Alsace on the south, and Lorraine on the south-west. It extends from 49° to 50° of N. lat. Its surface contains about 1600 square miles. It yields corn, flax, tobacco, vines, and all the fruits of the latitude. The pasturage likewise is good. The inhabitants are partly Catholics, partly Lutherans and Calvinists. Population about 305,000. Authors are divided about the origin of the name *Palatines* or *Psalzgraves*, as the Germans call them; but it seems most likely to be derived from the *palatia*, or palaces, which the old Frankish and German kings and Roman emperors were possessed of in different parts of the country, and over which they appointed supreme stewards or judges, who were called *Palatines* or *Psalzgraves*. The countries where these *Palatines* kept their courts, were, from them, called *Palatinates*; which name came at last to be appropriated, by way of eminence, to this country, as being the most considerable of them. In the thirteenth century the government of this country became vested in a branch of the ducal family of Bavaria. Various changes and interruptions in the succession ensued. In 1777, the branch of the family that governed Bavaria becoming extinct, the elector *Palatinate* succeeded to his states, removed to Munich, and governed them conjunctly with the *Rhenish* territory. This continued till 1794, when the French overran all the *Palatinate* to the left of the Rhine, and retained it until 1814. In that and the following year the congress of Vienna transferred the northern part to Hesse-Darmstadt, and the southern part to Austria, who ceded it the following year to Bavaria, as part of the indemnities for the Tyrol and Salzburg.

PALATINATE, UPPER, the former name of a German province, bordering on Bohemia, and now part of the circles of the *Regen* and the *Upper Maine*, in the kingdom of Bavaria. Its area is 2760 square miles; population 290,000. It is hilly and in general barren, its wealth consisting chiefly in its wood, pasturage, mines, and quarries. The produce of corn is insufficient for the consumption. This country formed for several centuries a part of the dominions of the elector *Palatine*; but in 1620 it was lost by the reigning elector, the son-in-law of James I. of England, and has ever since been in possession of Bavaria. Its sovereign was absolute until 1818, when the whole of the *Bavarian* dominions were allowed to send members to a representative body.

PALATINE, a township of Montgomery county, New York, on the north side of the Mohawk. Population 3111. Fifty-one miles W. N. W. of Albany.

PALATINE, or COUNT PALATINE, was a title anciently given to all persons who had any office or employment in the prince's palace; but afterwards conferred on those delegated by princes to hold courts of justice in the pro-

vinces; and on such among the lords as held a court of justice in their own houses.

PALATINE COUNTIES IN ENGLAND.—Chester, Durham, and Lancaster, are called counties *palatine*. The two former are such by prescription, or immemorial custom—at least as old as the Norman conquest; the latter was created by king Edward III. in favor of Henry Plantagenet, first earl, and then duke of Lancaster; whose heiress being married to John of Gaunt, the king's son, the franchise was greatly enlarged and confirmed in parliament, to honor John of Gaunt himself, whom, on the death of his father-in-law, the king had also created duke of Lancaster. Counties *palatine* are so called a *palatio*; because the owners thereof, the earl of Chester, the bishop of Durham, and the duke of Lancaster, had in those counties *jura regalia*, as fully as the king has in his palace; *regalem potestatem in omnibus*, as Bracton expresses it. They might pardon treasons, murders, and felonies; they appointed all judges and justices of the peace; all writs and indictments ran in their names, as in other counties in the king's; and all offences were said to be done against their peace, and not, as in other places, *contra pacem domini regis*. And indeed, by the ancient law, in all peculiar jurisdictions, offences were said to be done against his peace in whose court they were tried; in a court leet, *contra pacem domini*; in the court of a corporation, *contra pacem balivorum*; in the sheriff's court or tourn, *contra pacem vice comitis*. These *palatine* privileges (so similar to the regal independent jurisdictions usurped by the great barons on the continent, during the weak and infant state of the first feudal kingdoms in Europe) were in all probability originally granted to the counties of Chester and Durham, because they bordered upon enemies' countries, Wales and Scotland; in order that the owners, being encouraged by so large an authority, might be the more watchful in its defence; and that the inhabitants, having justice administered at home, might not be obliged to go out of the county, and leave it open to the enemy's incursions. And upon this account also, there were formerly two other counties *palatine*, *Pembrokeshire* and *Hexamshire*, the latter now united with *Northumberland*: but these were abolished by parliament, the former in 27 Hen. VIII. the latter in 14 Eliz. And in 27 Hen. VIII. likewise, the powers before mentioned of owners of counties *palatine* were abridged; the reason for their continuance in a manner ceasing; though still all writs are witnessed in their names, and all forfeitures for treason by the common law accrue to them. Of these three, the county of Durham is now the only one remaining in the hands of a subject. For the earldom of Chester, as Camden testifies, was united to the crown by Henry III. and the title has ever since been given to the king's eldest son. And the county *palatine* or duchy of Lancaster was the property of Henry of Bolingbroke, the son of John of Gaunt, at the time when he wrested the crown from king Richard II. and assumed the title of Henry IV. But he was too prudent to suffer this to be united to the crown; lest, if he lost one, he

should lose the other also. For, as Plowden and Sir Edward Cooke observe, 'he knew he had the duchy of Lancaster by sure and indefeasible title, but that his title to the crown was not so assured: for that, after the decease of Richard II., the right of the crown was in the heir of Lionel, duke of Clarence, second son of Edward III.; John of Gaunt, father to this Henry IV., being but the fourth son.' And therefore he procured an act of parliament, in the first year of his reign, ordaining that the duchy of Lancaster, and all other hereditary estates, with all their royalties and franchises, should remain to him and his heirs for ever; and should remain, descend, be administered, and governed, in like manner as if he never had attained the regal dignity; and thus they descended to his son and grandson, Henry V. and Henry VI.; many new territories and privileges being annexed to the duchy by the former. Henry VI. being attained in 1 Edward IV. this duchy was declared in parliament to have become forfeited to the crown, and at the same time an act was made to incorporate the duchy of Lancaster, to continue the county palatine (which might otherwise have determined by the attainder), and to make the same parcel of the duchy; and, farther, to vest the whole in king Edward IV. and his heirs, kings of England for ever; but under a separate guiding and governance from the other inheritances of the crown. And in 1 Hen. VII. another act was made, to resume such part of the duchy lands as had been dismembered from it in the reign of Edward IV., and to vest the inheritance of the whole in the king and his heirs for ever, as amply and largely, and in like manner, form and condition, separate from the crown of England and possession of the same, as the three Henrys and Edward IV., or any of them, had and held the same. The Isle of Ely is not a county palatine, though sometimes erroneously called so, but only a royal franchise. See COUNTY.

PALATINE GAMES, in Roman antiquities, games instituted in honor of Augustus, by his widow Livia, after he had been enrolled among the gods. They were celebrated in the palace, whence the name, and were confirmed by the succeeding emperors. Some authors say that these games were instituted in honor of Julius Cæsar, and others again confound them with the Ludi Augustales; but neither of these opinions seems to be well supported.

PALATINE MOUNT. See **PALATINUS**.

PALATINUS, a surname of Apollo, from his being worshipped on Mount Palatine.

PALATINUS MONS, or **PALATIUM**, the first mountain of Rome, occupied by Romulus, and where he fixed his residence and kept his court, as did Tullus Hostilius, Augustus, and all the succeeding emperors. The reason of the name is variously assigned; some say it is derived from the goddess Pales, or from the Palatini, who originally inhabited the place, or from balare, or palare, the bleatings of sheep, which were frequent there; or from the word palantes, wandering, because Evander, when he came to settle in Italy, gathered all the inhabitants, and made them all one society. On the east it has

Mount Cælius; on the south the Aventine; on the west the Capitoline; and on the north the Forum. Augustus built a temple to Apollo on this mount, adorned with porticoes and a library, valuable for the various collections of Greek and Latin MSS. which it contained.

PALATIUM, in ancient geography, a town of Italy, in the territory of Reate. Dionysius Halicarnassæus reckons it one of the first towns of the Aborigines; and from it Varro accounts for the name of the Mons Palatinus, viz. that a colony from Palatium settled there.

PALATIUM DIOCLETIANI, the villa of Diocletian, a town of Italy, near Salonæ, where he died (Eusebius); afterwards called Spalatum, which rose to a considerable city from the ruins of Salonæ, situated in Dalmatia on the Adriatic; now called Spalatto, or Spalatro.

PALAWAN, a large island of the Eastern Seas, between the northern extremity of Borneo and the Philippines. Its extreme length is 275 miles, and the average breadth about thirty-two miles. The country is flat to the bottom of the hills, and the productions are cowries, wax, tortoise-shell, and sea slug. There is much ebony and laka wood; and it is said there are hot springs and mines of gold here. The west side is inhabited by a savage people, who seldom frequent the coast; but the greater part of this island was formerly under the dominion of the Sooloos.

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| PALE , <i>adj.</i> & <i>v. a.</i> | } Fr. <i>pale</i> ; Lat. <i>pallidus</i> . Wan; faded; light, or white of color; dim; not bright or shining; to make pale: the derivatives seem obvious in their meaning: paly 'is used poetically for pale. |
| PALE-EYED , <i>adj.</i> | |
| PALE-FACED , | |
| PALELY , <i>adv.</i> | |
| PALENESS , <i>n. s.</i> | |
| PALISH , <i>adj.</i> | |
| PALY . | |

Look I so pale, lord Dorset, as the rest!
—Ay, my good Lord; and no man in the presence,
But his red color hath forsook his cheeks.

Shakespeare.

The glow-worm shews the matin to be near,
And 'gins to pale his uneffectual fire. *Id.*

The night, methinks, is but the day-light sick,
It looks a little paler. *Id.*

Why have they dared to march
So many miles upon her peaceful bosom,
Friighting her palefaced villages with war? *Id.*

The paleness of this flower
Bewrayed the faintness of my master's heart. *Id.*

Fain would I go to chafe his paly lips
With twenty thousand kisses. *Id.*
Her blood durst not yet come to her face, to take
away the name of paleness from her most pure whiteness. *Sidney.*

No nightly trance, or breathed spell,
Inspires the pale-eyed priest from the prophetic cell. *Milton.*

To teach it good and ill, disgrace or fame,
Pale it with rage, or redden it with shame. *Prior.*

A dim gleam the paly lanthorn shows
O'er the mid pavement. *Gay.*
The blood the virgin's cheek forsook,
A livid paleness spreads o'er all her look. *Pope.*
Shrines, where their vigils pale-eyed virgins keep,
And pitying saints, whose statues learn to weep. *Ja.*

When the urine turns *pale*, the patient is in danger. *Arbuthnot.*

Spirit of nitre makes with copper a *palish* blue; spirit of urine a deep blue. *Id. on Air.*

With broken lyre and cheek serenely *pale*
So sad Alcæus wanders down the vale;
Tho' fair they rose and might have bloomed at last,
His hopes have perished by the northern blast. *Byron.*

And unobserved but by the traveller's eye,
Proud, vaulted domes in fretted fragments lie,
And the fallen column on the dusty ground,
Pale ivy throws its sluggish arms around. *Conning.*

PALE, *n. s. & v. a.* } Lat. *palus*, a stake or
PA'LING, *n. s.* } vine-prop. A narrow
rail used for enclosures; an enclosure; hence a
district or territory: to enclose with pales or
otherwise: paling is used for a collection or
series of pales.

A ceremony, which was then judged very convenient for the whole church even by the whole, those few excepted, which brake out of the common *pale*. *Hooker.*

There is no part but the bare English *pale*, in which the Irish have not the greatest footing. *Spenser.*

Will you *pale* your head in Henry's glory,
And rob his temples of the diadem,
Now in his life? *Shakspeare. Henry IV.*

The English beech
Pales in the flood with men, with wives and boys. *Shakspeare.*

Get up o' the rail; I'll peck you o'er the *pales* else. *Id.*

The lords justices put arms into the hands of divers noblemen of that religion within the *pale*. *Clarendon.*

Let my due feet never fail
To walk the studious cloister's *pale*,
And love the high embowed roof. *Milton.*

Having been born within the *pale* of the church, and so brought up in the Christian religion, by which we have been partakers of those precious advantages of the word and sacraments. *Duty of Man.*

As their example still prevails,
She tempts the stream, or leaps the *pales*. *Prior.*

The diameter of the hill of twenty foot, may be *paled* in with twenty deals of a foot broad. *Id.*

He hath proposed a standing revelation, so well confirmed by miracles, that it should be needless to recur to them for the conviction of any man born within the *pale* of christianity. *Atterbury.*

Confine the thoughts to exercise the breath;
And keep them in the *pale* of words till death. *Dunciad.*

Woe to the gardener's *pale*! the farmer's hedge,
Flash'd neatly, and secured with driven stakes
Deep in the loamy bank. *Cowper.*

The best inclosure for a park is a brick or stone wall; but, as the expence of this is very great, it may be done by *paling*; the *pales* must, in this case, be of sound heart of oak. *Dr. A. Ross.*

PALE, in heraldry, one of the ten honorable ordinaries, so called because it is like the palisades used about fortifications, and stands perpendicularly upright in an escutcheon, dividing it lengthways from the top to the bottom, as in the annexed figure. It should occupy a third part of the shield. See HERALDRY.



PALEARIIUS (Aonius), a man of great pro-

bity, and one of the best writers of the sixteenth century. He was professor of polite literature at Sienna, and afterwards settled at Lucca. Finally, he removed to Milan, where he was seized, carried to Rome, and burnt in 1566, for having written in favor of the Lutherans, and against the inquisition. He wrote several pieces in verse and prose, of which a poem on the Immortality of the Soul is most esteemed.

PAL'ENDAR, *n. s.* Lat. *palus*, a trunk or stump of a tree. A kind of coasting vessel. Obsolete.

Solyman sent over light-horsemen in great *pale-dars*, which running all along the sea coast, carried the people and the cattle. *Knolles's History.*

PALEOUS, *adj.* Lat. *palea*. Husky; chaffy. This attraction we tried in straws and *paleous* bodies. *Broune.*

PALERMO, a beautiful city of Sicily, the capital of that island, stands on the north coast, and possesses a fine harbour. This city is of great antiquity; but by whom it was founded is uncertain; nor have we any authentic accounts of its inhabitants till it became a colony of the Phœnicians; after which it passed into the hands of the various nations that became masters of this island. Its former name was Panormus.

Properly speaking, here are two harbours, situated in the gulf between Mount Pelegrino and Cape Saffarano. In the one, which is very large, and in which there is a mole 1300 paces in length, ships lie at anchor; in the other their cargoes are laden and unladen. Both the harbours open to the west. There is also a superb quay which extends a mile from west to east in a rectilinear direction, and is called La Marina. The bay of Palermo forms a large amphitheatre, with the city in the centre; it is surrounded for some miles by a most delightful country, enclosed by romantic rocks and mountains. The town was formerly surrounded by a strong wall; but the fortifications are now entirely neglected except towards the sea. The quay is the principal public walk. Palermo is environed with avenues of trees, and has four principal entrances, facing the four cardinal points which are at the extremities of the two spacious streets which cross each other. It is filled with public monuments, churches, monasteries, palaces, fountains, statues, and columns.

Seen from the Monte Pelegrino, to the north, the city presents a most enchanting prospect: the bay forms a graceful sweep along the shore; the domes, turrets, and spires, rise conspicuous above the other buildings; the surrounding plain is studded with convents, villas, and cottages, romantically interspersed among its luxuriant foliage; while in the distance to the east and south rises a majestic amphitheatre of mountain scenery. The houses have in general something striking in their architecture; and the fountains, statues, and busts, in front of them, seem appropriate decorations of a capital: but a more close inspection lessens our admiration, the architecture being too uniform and frequently heavy.

The principal streets are the Cassaro and the Strada Nuova: both about a mile in length, and well paved, with broad foot-paths. Their point

of intersection forms an open space, called, from its shape, the Ottangolo. Each of the eight sides is formed by a beautiful building, three stories high, composed of the Doric, Ionic, and Corinthian orders; and each has in its front an elegant fountain. From this spot is enjoyed a beautiful perspective view of the best part of the town, terminated by four gates. Of the other streets few are deserving attention. In several parts of the town they are almost covered with booths, or rather workshops and tables, where tradesmen of all descriptions carry on their work as in Naples in the open air. The ground floor of the palaces, as they are termed, of the nobility, is frequently occupied by shops. In almost every house in the town there is a common staircase; and each stage of apartments forms the separate residence of a family. Balconies with iron railings also abound here. In winter the streets are wretchedly lighted by a few solitary lamps, scattered over different parts of the town.

The Marina is a raised platform or terrace, extending above a mile along the bay, and eighty paces in breadth. At the eastern extremity is a public garden, called the Flora, laid out in walks, interspersed with statues, fountains, and summer houses; and here people of all ranks are admitted. Adjoining is the botanical garden, the entrance of which is through an imitation of an ancient temple. The garden contains a collection of valuable plants. The royal palace is situated at the top of the Via Cassaro, and commands a beautiful view of the town. The adjoining gardens are delightful. Its exterior wants symmetry, but its apartments are spacious and finely ornamented. The square in front contains a statue of Philip IV. of Sicily. Many of the mansions of the nobility have marble columns, either in front or in the large court which they generally enclose; but the effect of these is frequently destroyed by the meanness of the buildings adjoining. There are in this city three theatres; but in none is there any display of architectural or scenic taste. On the other hand, in the magnificence of its churches, Palermo is second only to Rome, and there are above forty monasteries, and fifty convents. The cathedral called the Madre Chiesa, and situated in the Via Cassaro, was erected in the twelfth century, and is a mixture of Grecian and Gothic styles of architecture. A considerable part of it has been lately restored in a more modern style. Its interior is supported by granite pillars. The church of St. Giuseppe is also profusely ornamented, and contains some fine columns of gray Sicilian marble, nearly sixty feet high. Of the other churches, the appearance is generally fine, but devoid of taste. Most of the convents have elegant chapels attached to them, and good collections of paintings. The great hospital of Palermo stands near the royal palace; that of St. Bartholomew close to the Marina. The poor-house, or Albergo de Poveri, is also an extensive edifice; and there are several pawnbanks (Monti di Pietà) for the poor. Here are also three public libraries, but the books are chiefly old and theological. The university, an extensive pile of building, has an observatory, and several cabinets of medals and curiosities: the number of pupils is not above a few hun-

dreds. There is, besides, a separate institution for boys of rank, and the charity school of St. Roch for orphans. The females are for the most part educated in the convents.

The trade here is not extensive, the exports of Palermo being confined to a few articles in silk and satin, with some manufactures for the supply of Malta; the wine, oil, and other surplus produce of the surrounding country, fish, particularly tunnies. The importations are more various, comprising almost every article, either of luxury or convenience. In the middle of the eleventh century silk manufactures were first established by government. They are still kept up, and the silk thread obtained from the fish called the Pinna Marina, and manufactured here, is of exquisite fineness.

The population amounts, according to the most accurate estimate, to about 130,000. It has been sometimes erroneously taken much higher. Poverty seems the common lot of the frequenters of its crowded streets; and there exists a serious obstacle to the improvement of their circumstances, in the number of persons dignified with titles, without the means of supporting their rank. Beggars of the most wretched appearance swarm every where, but in reality are not so miserable as they look, regular distributions of food being made at the different charitable and morastic institutions. The temperature in winter seldom falls below 50° of Fahrenheit: in summer it keeps for some months between 80° and 90°. In that season the inhabitants generally shut up their houses and shops a little before noon, and keep them shut for three or four hours. The Sirocco is at this season very oppressive, but not of frequent occurrence. Palermo is supplied with water, conveyed in pipes to the tops of the highest houses.

It is an opinion entertained by some of our countrymen who have been in Sicily, says a friend, that the people of Palermo and of the western shores of the Val di Mazzara, are not in general so attached to the English as in the other parts of the island: we know not the origin of this opinion. 'As to Palermo, perhaps it may have arisen from the dislike which the court and Neapolitans profess for the English. But we have never observed the least partiality entertained by the people for the French in any one corner of the whole island, and we have made the entire circuit of it, and crossed the interior in two different lines. We witnessed a fray at Palermo, the description of which may give our readers some idea of the materials from which we have deduced our opinions; it occurred in the summer of 1810. Several Neapolitan dragoons insisted on taking some cheese from a shop at a price considerably below that at which it was retailed;—an altercation ensued, which became rather violent, and one of the dragoons drew his sabre, and striking at the shopkeeper (a practice these fellows have) wounded him slightly. The latter instantly called to his men and to his neighbours, with the masonic epithet 'picciotti'; 'let us, my lads,' exclaimed he, 'serve these Neapolitans as they suspect we intend to do, and as they know they merit; let us do away with them.' In a very few seconds seven

or eight of the dragoons measured their length on the ground; the rest escaped; and, a great concourse of people being assembled by this time, the wounded shopkeeper began to harangue them; he was joined by the greater part of the mob in venting every imprecation against the Neapolitani—calling them Jacobini. Several times was it exclaimed, 'had it not been for the English long since you would have betrayed us to the French, who are now at this very moment solely kept out of the island by the English, without the least exertion on your part.' They called the soldiers cowards, and spoke of them with the greatest contempt—saying they were only capable of practising extortion upon quiet shopkeepers. Such was the language of a mob which might have proceeded to greater lengths, had not the captain of the city, prince Carini, a nobleman at that time rather a favorite of the people, come up, and by his exertions and persuasions dispersed the crowd and restored tranquillity. As the weapons these picciotti made use of were rather Herculean, being sticks of the ash tree from which they make the manna in Sicily, three or four of the dragoons died, and the rest were much injured.'

Palermo, soon after the beginning of the first Punic war, passed into the hands of the Romans, who conferred on it various privileges. In a subsequent age the Saracens made it the capital of their Sicilian territories; and since their time, with the exception of very short intervals, it has been considered the capital of the island. But it has hardly any remains of antiquity, owing, in some measure, to the depth of soil and frequency of inundations here. It was the residence of the court of Naples from 1806 to 1815: at present it is the seat of a viceroy and of the chief boards of the island administration. It is likewise the see of an archbishop, who has the title of primate of Sicily. This city has suffered greatly by earthquakes, particularly in 1693; and it was greatly damaged by a fire in 1730, when a magazine of powder was blown up, containing 400 tons. It is 130 miles west of Messina, and 200 south by west of Naples. Long. of the observatory 13° 20' 0" E., lat. 38° 6' 44" N.

PALES, in Pagan worship, the goddess of the shepherds; to whom they offered milk and honey, in order that she might deliver them and their flocks from wild beasts and infectious diseases. This goddess is represented as an old woman. She was worshipped with great solemnity at Rome; and her festivals, called *palilia*, were celebrated on the 21st of April, the day that Romulus began to lay the foundation of the city of Rome. The ceremony consisted in burning heaps of straw, and in leaping over them. No sacrifices were offered, but purifications were made with the smoke of horses' blood, and with the ashes of a calf that had been taken from the belly of its mother, after she had been sacrificed, and with the ashes of beans. The purification of the flocks was also made with the smoke of sulphur, of the olive, the pine, the laurel, and the rosemary. Offerings of mild cheese, boiled wine, and cakes of millet, were afterwards made to the goddess. Some call this festival *palilia*, from *pariendo*, bringing forth,

because the sacrifices were offered to the divinity for the fecundity of the flocks.

PALESTINE, a country highly celebrated in antiquity, now a part of Asiatic Turkey, is bounded by Mount Libanus, which divides it from Syria, on the north; by Mount Hermon, which separates it from Arabia Deserta, on the east; by the mountains of Seir and the deserts of Arabia Petraea on the south; and by the Mediterranean Sea on the west.

This once fertile and happy spot was first called the land of Canaan, or Chanaan, from Noah's grandson. In Scripture, however, it is frequently distinguished by other names; such as the Land of Promise, the Land of God, the Land of Israel, &c. It received the name of Palestine from the Palestinians or Philistines, who possessed a great part of it; and it had the name of Judæa, or Judæa Palestina, from Judah, the most considerable of the twelve sons of Jacob, or rather from the tribe, his descendants. Christian writers have denominated it the Holy Land; partly on account of the many singular blessings it received from the Divine Providence, and partly on account of its metropolis being made the centre of God's worship and his peculiar habitation; but much more for its being the place of our Saviour's birth, the scene of his preaching and manifold miracles; and especially the place in which he accomplished the great work of our redemption. As to the name of Judæa, it did not begin to receive that till after the return of the Jews from the Babylonish captivity, though it had been styled long before the kingdom of Judah, in opposition to that of Israel, which revolted from it under Jeroboam, in the reign of Rehoboam. By profane authors it was called by many different names; such as Syria, Palestina Syria, Cœlosyria, Iduma, Idumæa, and Phœnicia or Phœnice; many of them given in contempt of the Jewish nation, whom they looked upon as unworthy of any other name than what distinguished the most obscure parts of the neighbouring provinces. That part of the country which was properly called the Land of Promise was enclosed on the west by the Mediterranean; east by the lake Asphaltites, the Jordan, the sea of Tiberias or Galilee, and the Samachonite lake; north by the mountains of Libanus, or rather Antilibanus, or the province of Phœnicia; and on the south by that of Edom or Idumæa, from which it was parted by another ridge of high mountains. The boundaries of the other part, which belonged to the two tribes and a half beyond the Jordan, are not so easily defined, nor those of the conquests made by the more prosperous kings of the Jews. All that can be said with any probability is, that the river Arnon was the first northern boundary on that side.

Judea in its largest sense was divided into maritime and inland, as well as into mountainous and champaign; and again subdivided into Judea on this side, and Judea beyond Jordan. But the most considerable division is that which was made among the twelve tribes, by lot, under the Divine superintendence. Of these, two and a half were seated beyond Jordan, and the rest on this side. The next remarkable division was made by king Solomon, who divided his king-

dom into twelve provinces or districts, each under a peculiar officer; every one of whom was to supply the king with provisions for his household in his turn; that is, each for one month in the year. But the most fatal division of all was, that which obtained under his imprudent son Rehoboam; when ten of the twelve tribes revolted, under the conduct of Jeroboam, who became head of a new monarchy, styled the kingdom of Israel in opposition to that of Judah, the title which distinguished the maimed kingdom of Rehoboam from that time downwards. Under the second temple the distinction lasted a considerable time, and the same hostilities continued between these two kingdoms; that of Israel taking the name of Samaria from its capital. The inhabitants were a mixture of the old Israelites, and of new colonies sent thither by the kings of Assyria after their conquest of it, till they were subdued by the Maccabees, and their metropolis destroyed. Under the Romans it began to be divided into tetrarchies and toparchies: the larger were those of Judea, Samaria, and Galilee, Upper and Lower; the lesser, those of Geraritica, Sarona, and others of less note; all which lay on this side of the Jordan. The rest, on the other side, were those of Gilead, Peræa, Gaulonitis, Auranitis, Batanea, and Decapolis. Josephus mentions another division made in Gabinus's time into five districts, or, as he styles them, *synedria* or councils, agreeable to the Roman manner: these were Jerusalem, Jericho, and Sephoris on this side Jordan; and Gadaris and Amathus on the other. In the reigns of the Christian emperors, it was divided afresh into Palestina Prima, Secunda, and Tertia, or Salutaris; which last included the greater part, if not the whole country.

The extent of this country is variously stated by modern geographers; some giving it no more than 170 or 180 miles from north to south, and 140 in breadth where broadest, though not much above half the breadth where narrowest. But, from the latest and most accurate maps, it appears to be nearly 200 miles in length, about eighty in breadth about the middle, and about ten or fifteen, more or less, where it widens or shrinks.

As to its present administration it is included partly in the pachalic of Acre, and partly in that of Damascus. The former comprehends all the sea coast, while the latter extends over the interior; and they are separated by a line drawn from north to south, through the whole length of Palestine. The former pachalic long groaned under the fierce and gloomy tyranny of Djezzar, a chief whose energy of character was solely directed to military achievements, and whose avarice sought to gratify itself by rapine and extortion, without ever viewing his interest as connected with the permanent prosperity of the districts which he governed. Travellers have drawn the most gloomy picture of the state to which this territory was reduced during the latter years of his administration. Towns that had once been flourishing were reduced to a few cottages; and plains which might have borne the most luxuriant crops were abandoned as pasture to the wandering Arabs. On entering the territory of

the pacha of Damascus, the happiest change presented itself. The virtue, or at least the enlightened avarice, of this chief, induced him to employ with diligence every means of protecting property, and encouraging industry; so that the whole country subject to him was cultivated like a garden. Unluckily the pacha was not sufficiently liberal in imparting a share to his masters at Constantinople; and, having thus incurred their displeasure, he was driven from his post, which is now occupied by another, who is pacha at once of Damascus, Acre, and Aleppo. This new chief, however, though bred under the ferocious Djezzar, is represented by Burckhardt in a favorable light.

Palestine is distinguished by a great variety of surface. Some modern writers have represented it as barren; but this can apply only to some of the mountainous districts around, and east of Jerusalem. According to the best informed travellers, the greater part displays a luxuriant fertility, and corresponds to the ancient descriptions of the promised land.

Judea proper, the ancient kingdom of Judah, comprises the territory extending from the Lake Asphaltites to the sea, and is composed of a range of limestone hills, rising as it were by stages from the level of the Mediterranean. The plain extending along the coast, though neglected, appears to be excessively rich. Sandys, passing from Gaza to Jaffa, describes the caravan as almost buried under pastures 'unmowed and uneaten.' As the track ascends, it becomes rugged and rocky, so that from Jaffa to Jerusalem the road is very steep and difficult. The sides of the mountains, however, are here suitable for the vine, the olive, and the sycamore, and are crowned with natural groves of oak and cypress; while the earth is covered with aromatic plants. Here are interposed valleys, particularly that of Jeremiah and the Terebenthine vale; covered with plentiful crops of tobacco, wheat, barley, and millet. Delicious wine is also produced. The mountains themselves are tenanted by the wildest Arabs, who find lurking places in the numerous caves. On reaching the summit of these ranges, the traveller discovers the country round Jerusalem, which certainly wears a dry, rugged, and stony aspect. Under a protecting government, even these tracks, however, might be, as formerly, highly productive. Traces may be found of walls by which the earth was formerly supported, of cisterns where the rain water was collected, and of canals by which it was distributed. Wild bees still lodge, in the hollow of the rocks, honey, which is seen flowing from them. Dr. Clarke, indeed, in travelling towards Jerusalem from the north, saw the limestone rocks and stony valleys often covered with plantations of figs, vines, and olives. The hills, throughout their whole height, were overspread with gardens, in the highest state of cultivation. Even the sides of the most barren mountains had been rendered fertile, by being divided into terraces, upon which soil had been accumulated with great labor. Proceeding eastward to the Dead Sea, the scene is decidedly barren; and gloomy and naked rocks, sand, and ashes, become the only objects. Dr. Seetzen discovered,

near its southern extremity, a mountain of sal-gem, the continual dissolution of which seems to produce the saltness of this lake. The bitumen so copiously produced is found on its shores, and floating on its surface. Seetzen contradicts the report of no bird being able to fly over its waters, and of there being a peculiar unhealthiness in the air around this sea.

The ancient Samaria is now chiefly comprised in the district of Napolose; and Napolose, the ancient Sichem, is the capital. This district, though mountainous, is well cultivated, and carries on a considerable trade in corn, silk, and olives. The most prominent feature here is Mount Carmel, extending along the Gulf of Acre. During the middle ages this mountain was almost entirely filled with grottoes cut in the rock; the abode of thousands of monks, who took the name of Carmelites. Pococke saw one of these monasteries, in which two or three monks still resided, and a grand excavated saloon forty feet long, twenty wide, and fifteen high, the scene of their general conferences.

North of Samaria, and communicating with Judea by the Jordan, is Galilee, distinguished by its natural beauty and fertility. The plain of Esdraelon, two days' journey in length, and twenty miles in breadth, is described by Dr. Clarke as one vast meadow, covered with the richest pasture. He considers this as the finest part of all Palestine, though when he passed across it was entirely neglected. Above it rises Mount Tabor, in a conical form, with a plane at the top, commanding a most delightful prospect. The lake of Tiberias, or Gennesareth, is surrounded by lofty and picturesque hills, the sides of which were once covered with towns, now almost deserted.

The Jordan, one of the most important natural features of Palestine, with the lake of Tiberias through which it passes, and that of Asphaltites which it forms by its discharge, divides it completely into two portions. The region beyond this river, though less noticed in history, include many tracks once fertile and flourishing, which had escaped the notice of modern geography, till they were recently explored by Seetzen and Burckhardt. Here are the Hauran and Dechaulan, consisting of a vast plain, not watered by any great river; yet the inhabitants contrive, by collecting the torrents and rain water into ponds, to obtain a sufficient supply for the purposes of agriculture. The rocks are entirely composed of basalt; and the villages, being built on their sides of this material, present a gloomy appearance. The district of El Botthin, the ancient Batanea, is distinguished by thousands of caverns into which the rocks have been hollowed out. There are still a number of large caves, which receive whole families, with their cattle. Here, and in the Roman district of Decapolis, are found remains of splendid cities. Those of Decberrash, the ancient Gerasa, are compared by Seetzen to Balbec and Palmyra. They include several palaces, two superb amphitheatres, and three temples; 200 Corinthian pillars of white marble, still supporting their entablatures, and a much greater number overthrown. The ruins of Ammon, the ancient Philadelphia, one of the

principal cities of Decapolis, are also splendid. To the south, upon the eastern shore of the Dead Sea, is found the district of Karak, bleak, barren, and mountainous; the ruins of Rabbath Moab, the ancient capital, attest its former importance.

The Turks occupy all the civil and military posts; while the inhabitants of the eastern empire, under the name of Greeks, form a very numerous part of the population. The country districts, however, are filled to a great extent with nomadic Arabs. The dress of this people is very simple; it consists of a blue shirt, descending below the knees, the legs and feet being exposed, or covered with the ancient cothurnus or buskin. A cloak of very coarse and heavy camels' hair cloth, decorated with black and white stripes adorns the back: this is of one square piece, with holes for the arms; and a seam down the back. Upon their heads they wear a turban, or dirty rag, like a coarse handkerchief, bound across the temples, one corner of which generally hangs down; and this, by way of distinction, is generally fringed with strings in knots. The Arab women are not much concealed from view. Their bodies are covered with a long blue shift, but their breasts are exposed; and extend to an extraordinary length. Upon their heads they wear a hood, and a handkerchief bound over it across the temples. Just above the right nostril they place a small button, studded with pearl, a piece of glass, or any other glittering substance. Their faces, hands, and arms, are tattooed, and covered with scars; their eyelashes and eyes being painted, or rather dirtied, with some dingy black or blue powder; their lips are dyed of a deep and dusky blue; their teeth jet black; their nails and fingers bright red; their ears are loaded with ponderous rings. Their usual weapons consist of a lance, a poniard, an iron mace, a battle axe, and sometimes a matchlock gun, and the moveables of a whole family seldom exceed a camel's load. They reside always in tents made of goats' hair on the open plain, or on the mountains; men, women, children, and cattle, all lodging together. In their disposition, though grave and sedate, they are said to be amiable, and most hospitable.

After the conversion of the Roman empire to Christianity, Judea became an object of religious veneration, and the empress Helena repaired hither in pilgrimage, and built various splendid temples. A crowd of pilgrims resorted thither subsequently from every part of the world: the most numerous arriving from the west, over which the church of Rome had fully established its domination. In the commencement, however, of the sixth century, an entire change took place. Judea was among the countries first exposed to the invasion of the fanatical followers of Mahomet, and soon fell under their sway. The caliphs were at first induced to encourage pilgrimage, from the gain which it afforded. But, when the Turks poured in from the north, they no longer observed the same courtesy. They profaned the holy places, and, the intelligence of their outrages being conveyed to Europe, roused the religious spirit of the age into those expeditions called the Crusades. All Europe seemed

to pour itself upon Asia: the Saracen armies were routed, Jerusalem taken by storm, and its garrison put to the sword. A Latin kingdom of Jerusalem was now erected here under Godfrey of Bouillon, which endured for above eighty years, the Holy Land streaming continually with Christian and Saracen blood! The Mahometan states, whose resources were all at hand; gradually, however, regained the ascendancy. In 1187 Judea was conquered by Saladin, on the decline of whose kingdom it passed through various hands, till in 1517 it was swallowed up in the Turkish empire. In modern times it was drawn into notice by Buonaparte's invasion of Syria, and his siege of its port of Acre; see ACRE: and we apprehend the reader will gladly receive in this place the contribution of two or three of the most celebrated modern travellers to the further illustration of its present state.

We begin with M. Chateaubriand. This author is well known in the annals of modern French literature, and long had the merit of standing, amidst the moral desolation of his country, the faithful advocate of religious feelings and principles, to the extent of the light which he had received. His popular works, *Les Martyrs* and *Le Génie du Christianisme*, entitle him to praise; and, to enrich his mind with images appropriate to his romance on the Martyrs of Christianity, M. de Chateaubriand undertook his eastern journey. His description of Jerusalem and its environs will be satisfactory to those who wish to acquire general notions of its present state, without entering into deep researches and correct investigations. But here, as well as every where else, an allowance must be made for the prejudices of the author as a Romanist. He of course attaches an importance to certain objects which appear indifferent enough to a general reader. This, however, and the historical parts of his work, appear to us to be the best. As the ship, laden with Latin pilgrims for Jerusalem, approached the shore of Palestine near Jaffa during the night, M. de Chateaubriand observes:—
'Je n'ai guère vu de scènes plus agréables et plus pittoresques. Le vent étoit frais, la mer belle, la nuit sereine. La lune avoit l'air de se balancer entre les mâts et les cordages du vaisseau; tantôt elle paroissoit hors des voiles, et tout le navire étoit éclairé; tantôt elle se cachoit sous les voiles, et les groupes des pèlerins renfroient dans l'ombre. Qui n'auroit béni la religion, en songeant que ces deux cents hommes, si heureux dans ce moment, étoient pourtant des esclaves, courbés sous un joug odieux? Ils alloient au tombeau de Jésus Christ oublier la gloire passée de leur patrie et se consoler de leurs maux présents. Et que de douleurs secrètes ne déposeroient-ils pas bientôt à la crèche du Sauveur! Chaque flot qui poussoit le vaisseau vers le saint rivage, emportoit une de nos peines.'
 T. 2, p. 95.

The ship discharged its cargo at the port of Jaffa, and the affecting account of the Christian charity and hospitality of certain Italian monks at that place afforded a singular contrast to other scenes which are recorded in history to have passed on the same soil.

But we hasten to the neighbourhood of Jeru-

salem. The church built over our Lord's nativity at Bethlehem must of course be an interesting object of contemplation to every Christian. It is a subterranean place of worship, lighted by thirty-two lamps, presented by different Christian princes; and being fitted up with much splendor, and preserved with great care, affords a striking contrast to the miserable Arab ruins, and half naked savages which strike the eye on emerging from the sacred place. The circumstance of the place of our Saviour's nativity being under ground has given rise to a controversy whether this be the real stable or not. But natural excavations were often used as stables in ancient times, and many fathers of the church preserved a tradition that Christ was born in Bethlehem, in a stable not made by art, but by nature, i. e. in a grotto (vide Justin, M. Dialog, cum Tryph: Origen contra Cels., and many other fathers). We confess that our conviction that the knowledge of the real place of our Lord's nativity has been preserved is very much derived from the circumstance of the emperor Adrian's having consecrated a grove at Bethlehem to the worship of Adonis, and erected a statue of this god over the grotto in question. (Hieron. Epist. 19, &c.) This plainly shows that the particular spot was visited and revered by the primitive Christians, which the heathen emperor endeavoured to prevent by the repulsive effect of profane and dissolute rites. Providence, however, so ordained, that these very profanations should be the means of ascertaining and transmitting to future ages the knowledge of the precise spot where the glory of the Redeemer first burst upon the world. The number of pilgrims to this church has very much diminished of late years, particularly of those of opulence and high rank, whose presence and contributions were most conducive to the maintenance of the ancient splendor of the place.

In his excursion to the Dead Sea, the author met some tribes of the Bedouin Arabs, whose morals and manners we are disposed to think he libels, when he asserts that they prostitute their wives and daughters for money. We never heard of such a depraved custom among them, and it is so contrary to the ordinary habits of the Arab race that we cannot help suspecting that it is only a tale picked up by the author, without having understood the meaning of what he was told. In the Dead Sea he perceived by day, and heard by night, myriads of little fish playing about the shores, contrary to the common and received opinion that it produces and sustains no living creature. We have been informed by a person who has often conversed with the Arabs that frequent the shores of that sea, that where the Jordan disembogues itself there are many fish carried down with the stream, which live and thrive within the verge of the supply of fresh water at the mouth of the river; but they have no means of ascertaining whether fish exist in the more central depths. Daily experience has convinced them of the falsehood of the report that birds cannot fly over the Dead Sea without falling down dead. They constantly do so without any apparent inconvenience. Flames are occasionally emitted from the surface, accompanied with sulphureous and mephitic smells, and fogs are

common at certain seasons. But it does not appear that there is any thing peculiarly unwholesome in the climate of the neighbouring country. M. de Chateaubriand carried home a bottle of the water to Paris, with a view to ascertain whether the sea-fish of Europe would live in it. A large piece of the asphaltos, from the borders of the lake, is to be seen at the Latin convent. It resembles coal, but is more shining, burns when put on the fire, and emits a sulphureous and extremely offensive smell.

From Bethlehem and the Dead Sea the author proceeded to Jerusalem, the great object and end of his journey. We have no doubt that a man like M. de Chateaubriand, endued with Christian feelings, must have been highly gratified at visiting the spot where the mysteries of our holy religion were performed. But his account differs little from that of other travellers; and the city itself and its society have undergone but little change from the state in which it was two centuries ago, when our plain-spoken countryman, Fynes Moryson, visited it in 1596. 'All the citizens,' says he, 'are either tailors, shoe-makers, cooks, or smiths (which smiths make their keys and locks not of iron but of wood), and in general poore, rascall people, mingled of the scum of divers nations; partly Arabians, partly Moores, partly the basest inhabitants of neighbour countries; by which kind of people all the adjoining territorie is likewise inhabited, which should have no trafficke if the Christian monasteries were taken away. Finally the inhabitants of Jerusalem, at this day, are as wicked as they were when they crucified our Lord, and as they have been since. Hence it was that Robert duke of Normandy being sicke, and carried into Jerusalem upon the backs of like rascalls, when he met by the way a friend who was then returning into Europe, desiring to know what he would command him to his friends, he earnestly entreated him to tell them that he saw duke Robert carried into heaven upon the backs of divels.'—Moryson's *Itinerary*, folio, 1617, p. 219. We shall content ourselves with remarking such further passages of M. de Chateaubriand's description as have either a pretension to novelty, or may be otherwise interesting to our readers.

The great objects of curiosity are of course Mount Calvary, the church of the Holy Sepulchre, the convents of Romish monks, who serve as guides and hosts to the Christians visiting Jerusalem, and the great mosque erected on the site of the temple of Solomon. Mount Calvary and the Holy Sepulchre, although formerly at some little distance from Jerusalem, are now in the very heart of the city, a circumstance that can only be accounted for by the very singular form of the ancient Jerusalem. It was built on two elevations, at a short distance from each other, and covered nearly the whole of their surface, thus forming two separate towns, which were joined together by a comparatively narrow slip of buildings across the valley between, principally occupied in ancient times by the palace and temple of Solomon. These buildings, according to an accurate general view of the city, taken by Meyer, about thirty years ago, from the Mount of Olives, and which is now before us,

are in ruins, or their sites totally bare, as well as many other parts of the old town. It is obvious that the two masses of buildings thus connected would form a town somewhat in the form of a horseshoe; and Mount Calvary and the Holy Sepulchre are situated in the valley which was included between the two elevations. But, Jerusalem having for many years been the seat of Christian governments, it is natural to conclude that their veneration for the spots where their redemption had been fulfilled would lead them to fix their residence as near to them as possible. The church which they built over the tomb of their Saviour has also in all ages attracted crowds of pilgrims of every rank, and houses must of course have sprung up for their accommodation; so that upon the whole there are sufficient causes to account for the increase of the town in this particular part, or rather for its removal from the elevations into the valley; for the old town, as we have just observed, has now very large spaces within its circuit either quite bare or covered with ruins.

The church of the Holy Sepulchre is now in ruins, having been burned down the year after M. de Chateaubriand saw it in 1806. Large subscriptions have been raised among the pious Christians of the Levant for its re-erection; although the following account of the priestcraft practised there by the Greek clergy, which, though unknown to M. de Chateaubriand, we have received from an eyewitness of veracity, would certainly induce us to wish that the care of this interesting place were transferred to better hands. On the day of the renewal of the holy fire, as the Greeks call it, the church of the Holy Sepulchre is crowded with pilgrims, Greek, Armenian, Coptic, and Abyssinian. This holy fire is said to issue spontaneously from the Holy Sepulchre on Easter eve. At that period the Greek patriarch, with his clergy arrayed in their sacerdotal robes, and followed by the Armenian patriarch and his clergy, and the bishop of the Copts, march in grand and solemn procession, and singing hymns, three times round the Holy Sepulchre. The procession ended, the Greek patriarch puts off his robes and enters alone into the sepulchre, probably with some phosphorus in his pocket; the Armenian and Coptic prelates remain in the antichamber, where they state that the angel was sitting when he appeared to the pious women after the resurrection of our Lord. As soon as the holy fire is kindled, as the patriarch says by a miracle, he lights his wax taper and comes forth from the sepulchre, and offers it first by a previous agreement to such person as bids the highest price for the special privilege of first lighting his taper from that of the patriarch. A considerable sum is paid for this preference, and much competition prevails for it, as they believe that the more it is removed from its first source, the more its purity and efficacy are diminished. The scene of confusion which ensues when the patriarch enters the church with two lighted tapers is beyond description. The people press forward with such incredible eagerness to light their tapers, that Turkish guards, placed with whips and sticks, and liberally dealing out blows on every side,

can scarcely, with all their exertions, prevent many from being trodden to death. The eager motions of the populace, like waves agitated by the wind—the noise and clamor which resound within the dome of the church—the multitude of candles gradually lighted by which the blaze increases, and at length fills the whole building and illuminates its inmost recesses, can more easily be imagined than described. The Greeks assert that the continuation of this pretended miracle is an evident and convincing proof of the truth of their religion; and it is certain that, had the fraud been discontinued, the number of pilgrims would be considerably diminished. The pecuniary interests of the clergy would also have suffered; for in former times some thousand (even 30,000) sequins have been paid for the permission of first receiving the fire from the high priest's hands; but superstition, at least among the rich, has latterly so much declined, that a few hundred sequins are now sufficient to secure the privilege. The Roman Catholic monks of Jerusalem look upon this fraud of the Greeks with horror. They are not exposed to the same temptation, and living in the midst of trials and oppressions, and exercising all the hospitality of which their scanty means are capable, appear to be a simple and interesting race of men.

The great mosque on the site of the temple of Solomon is the last object we shall here notice at Jerusalem, concerning which Abulfeda has the following passage in his description of Syria. 'There is at Jerusalem a mosque, a greater there is none in all Islamism, and in it there is a rock (sakhra), which is a stone elevated as a bench, about as high as a man's chest, and its breadth is equal to its height. There is a descent underneath by steps. This sakhra served the prophets, and especially the great prophet, as a place of dismounting from al-borak (a beast larger than an ass and smaller than a camel), who had carried them to Paradise.' M. de Chateaubriand gives several extracts from ancient travellers upon the interior of the mosque; but, as all entrance is strictly forbidden to Christians, he had of course no opportunity of verifying the information.

The following account was given of this mosque, in the year 1796, by the mufti of Jerusalem to a European, who conversed with him in Arabic at the house of the governor of Jerusalem, called by the Christians Pilate's house. This European is now in England, and from him we had the following account:—'Hearing me speak in Arabic he entered into conversation with me, and I took the liberty of asking him why the Mahometans would not permit the Christians to see the celebrated mosque of the rock. Upon which he opened a window which overlooks the mosque and all the ground on which it is raised, and permitted me to look at it as much as I pleased. He then said, 'We cannot permit the Christians to tread upon that ground, of which every spot is marked by the step of some holy prophet; still less upon the sakhra, or upon the interior of the mosque. But there are thirty-two large columns which support

for the support of the smaller arches; there are many lamps that are lighted on our festivals. There is a mihrab of marble with architectural ornaments, and a staircase to it with steps of the same material. The walls are incrustured with marble like the great mosque at Damascus, and ornamented with painted tiles. The name of God (Allah!) is written in large characters in several parts of the mosque, as well as the names of Mahomet and his first successors. We believe that if an infidel should walk between the columns they would meet and crush him to death.'

'The mosque, on account of its peculiar sanctity, was once the place towards which the Mussulmans of north-western Asia were to turn their faces in their prayers; but this commandment was altered by God's special order, and the Bait Allah (house of God) at Mecca was appointed for the only Kiblah. On the sakhra or rock were fixed iron rings, at which to tie the prophet's horses when they came to worship in the mosque. The mosque is called by many names by the Mahometans to denote its superiority over other temples, as al akse, the whole world, al masgid al akse, or al giarmiâ al akse, templum extremum. The origin of its importance seems to have been this:—The kalif Abd-al-Malik al Merwan was jealous of Abdallah the son of Zobeir, the ruler of Arabia, and in order to prevent his subjects in Syria from going in pilgrimage to Mecca, and thus enriching his rival, and probably also with a view to attract the profitable concern of receiving pilgrims from other countries to his own capital, he set up this mosque in opposition to that of Mecca. He adorned and beautified it in the year 685 of the Christian era, employing the whole revenue of Egypt for nine years for the accomplishment of his design. It is believed, on the faith of tradition, that the sakhra or rock is the same from which God spake to the patriarch Jacob, and that the sanctum sanctorum was built where the mosque now stands. Upon the whole it is impossible to contemplate the holy city in its desolate condition without the deepest interest. Jews, Mahometans, and Christians of all sects and denominations unite in acknowledging the existence of something extraordinary and supernatural about her awful ruins. They raise their heads from the dust, and from among them is heard a voice to warn and instruct mankind, and to proclaim to all ages and nations of the world, *This hath God wrought*.

Dr. CLARKE assures us that he 'ventured to see this country with other eyes than those of monks, and to make the Scripture rather than Bede or Adamnanus his guide in visiting the holy places; to attend more to a single chapter, nay a single verse of the gospel, than to all the legends and traditions of the fathers of the church.' Now we certainly think that it was a very laudable precaution to refer constantly to the gospel in travelling over the scenes where the events of that sacred history were transacted. But surely it is reasonable to conclude that the 'fathers of the church,' and even that 'old lady of good intentions, the empress Helena,' were not unmindful of this obvious precaution.

On the second day's journey from Acre, Dr

Clarke and his companions passed over the plain of Zabalon, 'every where covered with spontaneous vegetation, flourishing with the wildest exuberance'; but entirely neglected and uncultivated through the tyranny and bad policy of the tyrant Djezzar. In the centre of this plain lies the ancient acropolis of Sapphura, or Zeph (Joshua xv. 55), once 'the chief city and bulwark of Galilee.' In the ruins of a stately Gothic edifice, called the house of St. Anne, some ancient pictures, part of the former decorations of the church had lately been discovered; but, from the account and engraving given by Dr. Clarke, they do not appear to be essentially different from the oldest of the sacred paintings, which are occasionally discovered in the ancient European cathedrals. From Sephoury, notwithstanding the rumors of plague, the party proceeded to Nazareth, a small town or village situated upon the side of a barren rocky elevation facing the east, and commanding a long valley. An engraving of this nursing place of our Saviour is given: it appears to stand in a desolate situation surmounted by romantic hills. The plague, the tyrannical government of Djezzar, and the natural barrenness of the soil, had conspired to reduce the few inhabitants that remained to the most wretched state of indigence; and to provoke a repetition of the taunting question, whether 'any good thing could come out of Nazareth?' The objects of curiosity he found at Nazareth were, 1. A cave, the supposed residence of Joseph and the Virgin Mary; for building a handsome church over this retreat the empress Helena, mother of Constantine, has incurred the violent anger of Dr. Clarke, who even goes the length of asserting, that this good old lady would have dedicated and paved the sea of Tiberias, had not nature opposed itself to her wishes. 2. The workshop of Joseph. 3. The synagogue, where Christ is said to have read the Scriptures to the Jews; and, lastly, a precipice without the town, which accords with the words of the Evangelist, and proves the present site of the village to be the same with that occupied by the ancient town. The following singular scenes presented themselves during the day, which the party spent at Nazareth:—As we passed through the streets, loud screams, as of a person frantic with rage and grief, drew our attention towards a miserable hovel, whence we perceived a woman issuing hastily, with a cradle, containing an infant. Having placed the child upon the area before her dwelling, she as quickly ran back again; we then perceived her beating something violently, all the while filling the air with the most piercing shrieks. Running to see what was the cause of her cries, we observed an enormous serpent, which she had found near her infant, and had completely despatched before our arrival. Never were maternal feelings more strikingly portrayed than in the countenance of this woman. Not satisfied with having killed the animal, she continued her blows until she had reduced it to atoms, unheeding any thing that was said to her, and only abstracting her attention from its mangled body to cast, occasionally, a wild and momentary glance towards her child. In the evening we visited the environs, and, walking to

the brow of the hill above the town, were gratified by an interesting prospect of the long valley of Nazareth, and some hills between which a road leads to the neighbouring plain of Esdraelon, and to Jerusalem. Some of the Arabs came to converse with us. We were surprised to hear them speaking Italian; they said they had been early instructed in this language, by the friars of the convent. Their conversation was full of complaints against the rapacious tyranny of their governors. One of them said, 'Beggars in England are happier and better than we poor Arabs.' 'Why better?' said one of our party. 'Happier,' replied the Arab who had made the observation, 'in a good government: better, because they will not endure a bad one.' (p. 439).

From Nazareth they proceeded to the sea of Tiberias, 'an immense lake, almost equal in the grandeur of its appearance to that of Geneva,' surrounded by magnificent mountains rising from the cultivated plains which deck its immediate borders. At the northern extremity of the lake is a mountainous territory, still called in Arabic 'the wilderness,' to which John the Baptist and Jesus himself retired in their early years. To the south-west, at the distance of twelve miles, lies Mount Thabôr, having a conical form, and perfectly insulated on the northern side of the wide plains of Esdraelon. In a romantic nook, on the borders of the lake, is seated the little fortified town of Tiberias, and near it the warm baths of Emmaus. And northward, upon a bold declivity, the travellers beheld 'the situation of Capernaum, upon the boundaries of the two tribes of Zabulon and Naphthali.' This exquisitely interesting scene is illustrated by a well executed engraving. From Tiberias they crossed the plain of Esdraelon, round the base of Mount Thabôr, to Napolose the ancient Sichem. On the plain were encamped parties of Djezzar's cavalry, and the Arabs, whose incursions they were sent to check, occupied the mount and the surrounding hills; a trifling conflict, for the possession of some cattle, had occurred between the hostile bands a few days before. To the historical celebrity of this vast plain, the following well-wrought passage bears an opposite testimony:—'Here, on this plain, the most fertile part of all the land of Canaan (which, though a solitude, we found like one vast meadow, covered with the richest pasture), the tribe of Issachar 'rejoiced in their tents.' In the first ages of Jewish history, as well as during the Roman empire, the Crusades, and even in later times, it has been the scene of many a memorable contest. Here it was that Barak, descending with his 10,000 from Mount Thabôr, discomfited Sisera and 'all his chariots, even 900 chariots of iron, and all the people that were with him,' gathered 'from Harosheth of the Gentiles, unto the river of Kishon'; when 'all the host of Sisera fell upon the edge of the sword; and there was not a man left'; when 'the kings came and fought, the kings of Canaan in Taanach, by the waters of Megiddo.' Here also it was that Josiah, king of Judah, fought in disguise against Necho, king of Egypt, and fell by the arrows of his antagonist. So great were the lamentations for his death that the mourning for Josiah became 'an

ordinance in Israel.' The 'great mourning in Jerusalem,' foretold by Zechariah, is said to be as the lamentations in the plain of Esdraelon, or, according to the language of the prophet, 'as the mourning of Hadadrimmon in the valley of Megiddon.' Josephus often mentions this very remarkable part of the Holy Land, and always under the appellation of 'The Great Plain.' The supplies that Vespasian sent to the people of Sepphoris are said to have been reviewed in the great plain, prior to their distribution into two divisions; the infantry being quartered within the city, and the cavalry encamped upon the plain. Under the same name it is also mentioned by Eusebius, and by St. Jerome. It has been a chosen place for encampment in every contest carried on in this country, from the days of Nabuchodonosor, king of the Assyrians (in the history of whose war with Arphaxad it is mentioned as the great plain of Esdraelon), until the disastrous march of Napoleon Buonaparte from Egypt into Syria. Jews, Gentiles, Saracens, Christian Crusaders, and Anti-Christian Frenchmen, Egyptians, Persians, Druses, Turks, and Arabs, warriors out of 'every nation which is under heaven,' have pitched their tents upon the plain of Esdraelon, and have beheld the various banners of their nations wet with the dews of Thabor and of Hermon.' (p. 496.)

'As the traveller descends towards Napolose, it appears luxuriantly embosomed in the most delightful and fragrant bowers, half concealed by rich gardens, and by stately trees collected into groves, all around the bold and beautiful valley in which it stands. Trade seems to flourish among its inhabitants;' and in the neighbouring country the cultivation was every where marvellous, affording a most striking picture of human industry; the rocks and stony valleys of Judea were covered with figs, vines, and olives; the hills laid out with gardens; the mountains divided into terraces in the highest state of agricultural perfection; on all sides were to be seen plentiful crops of millet, cotton, linseed, tobacco, and barley, exhibiting proofs of the incalculable produce which might be raised from the Holy Land under a wise and beneficent government. 'Its perennial harvest; the salubrity of its air; its limpid springs; its rivers, lakes, and matchless plains; its hills and vales; all these, added to the serenity of its climate, prove this land to be, indeed, 'a field which the Lord hath blessed: God hath given it of the dew of heaven; and the fatness of the earth, and plenty of corn and wine.'

On the ancient history of Sichem, connected with the stories of Joseph, Eleazar, Joshua, &c., Dr. Clarke has an animated passage, which we regret our inability to insert. A long and tedious ride, with the thermometer at 102° of Fahrenheit, brought them to the Holy City.

We have entered fully into the present state of JERUSALEM after this writer in our article of that name. Concerning the discoveries which Dr. Clarke thinks that he has made, and his removal of Calvary and the tomb of our Saviour from their reputed localities, which have been acquiesced in for 1800 years, to a spot at a considerable distance,—we shall content ourselves with observing that the whole hypothesis appears

to us to rest upon mere conjecture; and, although there be neither 'impiety nor temerity in venturing to surmise' that the hypothesis is founded in probability, we think 'the existing documents' produced altogether insufficient to establish it.

After a long philippic against the empress Helena and her architectural piety, to which every visitor to Jerusalem since the days of that pious lady is pronounced to be a dupe, Dr. Clarke describes his visit to the ordinary objects of curiosity in the city and neighbourhood; we are not aware that any thing very worthy of observation occurs in these remarks; we shall, therefore, accompany Dr. Clarke to Bethlehem, the place of our Saviour's nativity; a town covering the ridge of a hill on the southern side of a deep and extensive valley, the most conspicuous object being the monastery erected over the cave of the Nativity. An interesting engraving of this picturesque town illustrates the following account:—'The temptation to visit Bethlehem was so great, that, notwithstanding the increasing alarms concerning the ravages of the plague as we drew near the town, we resolved, at all events, to venture thither. For this purpose, calling all our troop together, we appointed certain members of our cavalcade to keep a look-out, and act as guards in the van, centre, and rear of the party, to see that no person loitered, and that none of the inhabitants might be permitted to touch us, or our horses and camels, on any account whatsoever. In this manner we passed entirely through the town, which we found almost deserted by the inhabitants, who, having fled the contagion, were seen stationed in tents over all the neighbouring hills. It appeared to be a larger place than we expected to find: the houses are all white, and have flat roofs, as at Jerusalem, and in other parts of the country. A nephew of the governor of Jerusalem, mounted upon a beautiful Arabian courser, magnificently accoutred, rode near the centre of our caravan. He had volunteered his company, as he said, to ensure us respect, and as a mark of the governor's condescension. To our very great embarrassment, we had no sooner arrived in the middle of Bethlehem, than some of the inhabitants, at the sight of this man, came towards him to salute him; and, in spite of all our precautions and remonstrances, a Bethlehemite of some consideration came and conversed with him, placing his arm upon the velvet saddle-cloth which covered his horse's haunches. This, we knew, would be sufficient to communicate the plague to every one of us; therefore there was no alternative, but to insist instantly upon the young grandee's immediate dismissal. However, when our resolutions were made known to him, he positively refused to leave the party: upon this, we were compelled to have recourse to measures which proved effectual; and he rode off, at full speed, muttering the curses usually bestowed on Christians, for our insolence and cowardice. We reached the great gate of the convent of the nativity without further accident; but did not choose to venture in, both on account of the danger, and the certainty of beholding over again much of the same sort of mummery which had so frequently put our patience to the proof in Jerusalem. Passing

close to its walls, we took our course down into the deep valley which lies upon its north-eastern side; visiting the place where tradition says the angel, with a multitude of the heavenly host, appeared to the shepherds of Judea, with the glad tidings of our Saviour's nativity; and finally halting in an olive plantation at the bottom of the valley below the convent and the town.' (p. 614.)

Under the walls of Bethiehem they stopped to refresh themselves with a draught of its 'pure and delicious water,' in reference to which Dr. Clarke gives the following ingenious illustration. 'David, being a native of Bethlehem, calls to mind during the sultry days of harvest, a well near the gate of the town, of whose delicious water he had often tasted, and expresses an earnest desire to assuage his thirst by drinking of that limpid spring. And David longed and said, Oh! that one would give me drink of the water of the well of Bethlehem, which is by the gate (2 Sam. chap. xxiii.). It will be recollected, that three loyal and mighty men fought their way through the Philistine garrison, procured the draught, and laid it at the feet of their sovereign. It will also be recollected with what noble self-denial he declined the proffered luxury, and how frequently the example has been followed by other celebrated commanders of ancient and modern times. From Bethlehem Dr. Clarke and his friends made their way, with some risk, through hordes of hostile Arabs, to Rama (see Jeremiah xxxi. 15), and thence to Joppa, or Jaffa. The road, and particularly the neighbourhood of the towns, were strewn with dead bodies, victims of the plague, which was raging with great fury in this part of Palestine. From this place they returned by sea to Acre, and the approach to Mount Carmel and the Bay of Acre concludes this part of Dr. Clarke's Travels.

Our next traveller is a French nobleman, M. le Comte de Forbin. He sailed from Toulon 21st of August 1817, on his Travels in Greece and Syria, and arrived in October in sight of the mountains of Syria.

Mount Carmel was the first land he saw; and soon after the vessel entered the small harbour of St. Jean D'Acre. 8000 or 10,000 Turks, Arabs, Jews, and Christians, carry about with them into the polluted streets and bazaars of this place, an air of dark and ferocious melancholy. Even human sense is disagreeably affected, we are told, by objects of deformity, filth, and wretchedness. Beings, that look as if they were risen from tombs, drag themselves along half naked, with a sort of covering of dirty white, streaked with black. At each step one sees by the side of the wretched victims of ophthalmia, the sufferers under the cruelty of the late Djezzar Pacha (the Butcher, as the name signifies) deprived of their eyes, noses, and ears. These miserable creatures rest always abroad, lying under the walls of the seraglio gardens. The present inhabitant of this palace, the successor of the Butcher, seldom stirs out,—'deaf to the cries of a starved population, he passes his life in groves of myrtles which are refreshed by limpid rivulets.' His minister, who relieves him entirely from the weight of public business, oc-

cupied the same honorable and elevated situation under the Butcher of blessed memory, and in one and the same day had his salary doubled, and his nose and ears cut off, by the commands of his gracious master! This tried servant of the public is described by M. de Forbin, as supple, clever, and incalculably rich. Our author was introduced to the present Pacha, Soliman; he found him squatting in the corner of a sofa, and surrounded by courtiers, who received his permission, when it was thought proper, that they should laugh at the sallies of a favorite buffoon who held a high reputation at court. He examined the traveller's uniform very particularly, and described at great length the excellence of his Arabian horses, smoking as he spoke, and ordering coffee to be brought in for his visitor.

Our author left St. Jean D'Acre with a numerous caravan. Barren hills lie along the coast, about a league from the sea, and the intervening space is a white sandy beach. The ruins of Athlit present themselves; it was the last possession held by the crusaders; its port is now filled with sand, its ramparts are fallen, and its fine gardens are stagnant marshes. The khan (inn) of Santoura was found entirely occupied by another caravan: our traveller and his companions lay down in some small cabins, from which toads and centipedes soon drove them. The town of Caesarea presents a very striking sight; it is entirely deserted, yet, strange to say, stands in a state of perfect preservation. The view of its ramparts, ports, and monuments, excites an undefinable surprise. The streets and the public squares are perfect; nothing would be wanting but gates to its high and frowning battlements to render it susceptible of defence. The walls of the churches are yet black with the smoke of incense; the pulpit, illustrated by learned and courageous bishops, still stands; the graves alone seem to have sustained violence; they are open; and the human bones scattered about give the sole proof that man has once dwelt in the midst of this frightful solitude. The silence that reigns around is only broken by the monotonous noise of the tide, that comes rolling on—dashing over upon the piers and quays of the port, where no step of mariner or merchant ever treads. The ceaseless beating of the waves has here shaken and shifted the stone-work: the wall of the light-house is split, and its staircase and chambers are seen within, mouldering away, though as yet they afford a sanctuary to the sea-birds, which have there found an undisturbed habitation. Superb columns are still standing in this town. Next evening the caravan bivouacked under some sycamores, near which there was an abundant well; and young and handsome women! 'y appartaient, d'un pas majestueux, la cruche de Rachel.' The 15th of November they arrived at Jaffa, where our author was received in a miserable convent of fathers of the Holy Land, who are obliged to perform their rites in a secret vault, and are a prey to constant persecution. From Jaffa he proceeded to Rama, where he found the superior of the religious fraternity, by whom he was received, to be 'a Spaniard with a thundering voice and an imposing stature. This good monk

did not seem to me at all to like the state of martyrdom to which he was devoted. He gave me a clean chamber, looking out on a terrace shaded by palm-trees.'

From Rama to Jerusalem the road passes for two or three miles over the well-cultivated plains of the ancient Arimathea: afterwards the traveller passes by the hills of Latroun into profound valleys, where vegetation becomes rare and feeble; complete barrenness succeeds; and up to Jerusalem one traverses a red and sterile soil. The eye discovers nothing in the distance but the signs of vast natural eruptions and catastrophes; dry beds of torrents; and winding roads covered with sharp flints. To these may be added, to complete the picture, ruined cisterns, at the bottom of which a little stagnant water lies fetid and green, with bare craggy mountains rising around. Such, says our author, is the scenery depicted by Jeremiah; such is the valley of Terebintha; such is the approach, preparing the mind for the awful impression about to be made upon it by the first appearance of Jerusalem.

Jerusalem, observes Chateaubriand, has been taken and sacked seventeen times; millions of men have been massacred within its bosom, and it may almost be said that these massacres still continue:—a person who would take lodgings in the town would be daily in danger of his life, observes the author whom we have just mentioned. Great cities, and even whole nations, have been cast down and destroyed:

Great Carthage self in ashes cold doth lie;
Her ruins poor the herbs in height scant pass;
So cities fall, so perish kingdoms high;
Their pride and pomp are hid in sand and grass.

FAIRFAX.

But Jerusalem still exists, still drags on a cadaverous life, to excite horror, while these utterly fallen abodes of past greatness inspire a fine melancholy. She presents the aspect of dreary, and gaunt, and painful disease: they offer the spectacle of calm death.

The sun was on the point of setting when M. de Forbin, from an elevated part of this rough and inconvenient road, caught the first view of this celebrated place. 'I perceived, in fine, long ramparts, towers, and vast edifices, surrounded by barren and black ground, and rocks that looked as if they had been smitten by thunder. Here and there ruined chapels were to be observed: Mount Sion rose in view; and more distant, the rugged mountains of the Arabian desert.' Our author, with a very just feeling, expresses his indignant contempt for the poor-minded creature, of whatever country or belief, who should regard this lost city in a temper of ironical sceptical malice. 'Quelles que soient les opinions religieuses, le seul engourdissement de l'esprit pourrait s'opposer à la sensation de surprise et de respect qu'inspire Jerusalem. Tout est silencieux autour de cette ville; tout est muet: le dernier cri de l'Homme-Dieu semble avoir été le dernier bruit répété par les échos de Siloé et de Gehennon.'

The very day of his arrival afforded him a most interesting spectacle, in a meeting of the

whole Jewish population of Jerusalem, which took place in the valley of Josaphat. The Turkish governor had sold to these poor creatures permission to celebrate the feast of tombs. 'At the view of these captives seated in silence on the sepulchral stones of their ancestors, it might have been almost thought that the awful trumpet had made itself heard, that the generations of mankind crowded the borders of Cedron, and that from the bosom of the cloud the words of joy and of sorrow were about to issue.' (p. 85). It is supposed that Jerusalem contains about 25,000 inhabitants. Not more than 200 Christian families reside there. Our author calculates the Jews still remaining in this ancient capital of their people at about 8000 or 9000. Scarcely ought one to call by the name of street, the narrow, filthy, and steep passage which divides the half-fallen houses in the quarter of the Hebrews. Squalid and diseased wretches, with features strongly marked, quarrel and tear each other to pieces for the pittance which charity throws to their misery. Descending by a ruined staircase into vaults that were falling in, where they were not partially sustained by a few pillars that indicated they had been formerly gilt and sculptured, our author found himself, to his astonishment, in the grand synagogue. Some children in rags were learning, from a blind old man, the ancient history of the city, and heard that their fathers adored the God of Israel, not in the wretched den where they then were, but under porticos of marble, and roofs built of the cedars of Lebanon! Such is now the condition of the remnant of the extraordinary people whose hands raised, and whose sweat and blood bathed the proudest monuments of Memphis and of Rome. The space within the walls would contain six times the number of inhabitants above specified; so that a great part of its unpaved and steep streets is uninhabited, and a large quantity of houses, churches, and monasteries, are entirely deserted. The inhabited houses generally receive the light only by means of the door, and one or two small holes for windows, with wooden bars. In a few poor shops they sell olives and fruits brought from Damas, rice, corn, and some dried vegetables: a group of starving Arabs may be seen devouring these luxuries with their eyes; while the Turkish shopkeeper smokes his pipe with indifference, utterly regardless, to all appearance, of his own interests.

M. de Forbin went from Jerusalem to Bethlehem, which received its name, it is said, from Abraham himself. David there guarded his flock, and Boaz and Ruth were Bethlehemites. The first Christians built a small chapel over the spot where the stable stood in which our Saviour was born: the emperor Adrian substituted the altar of Adonis, which was afterwards thrown down by St. Helen, who caused the church to be erected that stands there to this day. The Armenians are now in possession of this temple. The convent has all the appearance of a fortress; the principal gate is made very low, to hinder, as our author says, the Arabs from entering on horseback, or in too great number. The town had just been visited with an order for a contribution of 8000 piastres; and the population, which is

entirely Christian, was in a state of great agitation. The young women of Bethlehem are described as graceful, and finely featured: a veil envelopes, without hiding, their countenance; and their arms are naked. M. de Forbin visited many families of the place, and was kindly received. Going out of the town, you see the mountains of Hebron, where the pretended tomb of Abraham is still shown; in the valley of Mamre repose the ashes of Caleb: further distant they point out the rock in a cave of which David hid himself from the fury of Saul.

To go to Jericho, it is necessary to leave Jerusalem by the gate Setty-Mariam, and to cross the torrent Cedron. When M. de Forbin took this journey it was winter; but the temperature of the air scarcely permitted him to believe this. Throughout the whole of Judea, occasional rain is the only indication of winter: 'autumn brings no fruits, spring expands no flowers; yet the heats of summer dry the source of Siloa: it would appear that there are no longer seasons for this unhappy country.' (p. 92.) The road to Jericho passes through narrow valleys and deep ravines, almost impracticable, that seemed made by some recent convulsion. The mountains looked as if they were stained with sulphur, as at the Solfatara in the neighbourhood of Naples. The traveller, after having descended into dismal chasms, must climb sharp and steep rocks to discover the plain of Jericho. The Arabs call it Ryah: a crowd of huts, built of earth and reeds, and roofed with a sort of heath, is all that now remains bearing the name of this city, whose once celebrated walls are replaced by fagots of thorns and thistles, that hardly serve to defend the cattle against the frequent attacks of wild beasts. The age, as wretched as his subjects, inhabited a ruined tower, which our traveller climbed with much difficulty. The best abode in the place was assigned him for the night; but he could not support its bad smell: he joined his companions round a large fire in the open air, where they supped on a kid killed before them, and broiled on the wood ashes. 'Wrapped up in my cloak, and stretched on the ground, I slept in spite of my bad supper and the noise of my entertainers. The principal persons of Jericho (les notables) came to chat with the Turks of my escort,—and the conversation was long and loud. We were all on the alert again before break of day, and saw the sun rise behind the mountains of the Arabian desert.' (p. 94.)

The Dead Sea, or Asphaltic Lake of Sodom, is seen on the right of Jericho: the Jordan discovers itself far off in the distance on the left, between two small hills covered with thorny shrubs. The age added some fresh men to our traveller's escort, who proceeded towards the spot where the sinful towns were destroyed by the fire of heaven. The road lay over a sandy plain, thinly spotted with small shrubs, and some plants of an exquisite perfume. The party was on its guard against Arab robbers, and took prisoner a Bedouin whose companions fled at its approach. He was afterwards permitted to get off by throwing himself into the Jordan. The banks of this river are high, and covered

with trees; its water is yellow, troubled, and pretty deep. Its width here is trifling—about a quarter that of the Seine at Paris.

Our author's description of the Asphaltic Lake contains nothing new: he says, the Jews believe that, at the birth of Messiah, the fire-destroyed cities will re-appear. From a hill formed of ruins, supposed to be those of Gomorrah, M. de Forbin sketched a view, which included the Mount Nebo, where Moses died. 'Searching on the banks of the river for vestiges of the guilty town, I in fact discovered some remains of walls, of a tower, and of several columns.'

Nothing, according to our author's account, can equal the horrible melancholy of this country. Deep and dark valleys are suddenly shut up by a lofty mountain, perfectly white, which in the twilight might be taken for an enormous phantom defending the passage; the crevices and the caverns then put on the appearance of features, and the ravines down its sides mark the folds of its frightful robe. 'Mountains of cinders, in the shape of imperfect and reversed cones; fantastic rocks, riven, overturned, and standing; these were the objects we encountered for several leagues, till we gained a more elevated spot, whence the bitter waters of the Dead Sea were again visible: at this moment the sun was descending behind the mountains of Edom. The lake seemed an exquisite surface of lapis lazuli, of which the mountains that surrounded it formed the golden border. Further off the rocky crags, heaped one upon the other, now put on the appearance of a fortified city, and now of a vast amphitheatre that had no other spectators or actors but the kites and vultures. Immense eagles balanced themselves majestically in the mid-air above their ancient and undisturbed empire.' (p. 101.)

The monastery of St. Sabas, one of those dismal inaccessible Cenobite retreats, of which numbers are to be found in the deserts of Asia, is placed on the peak of a rock, and hangs at the height of 400 feet over the dried torrent of Cedron. Our author describes it as the most frightful solitude he had ever seen: the grots of the unhappy fanatics are excavated in nooks, and under projections that expose them to continual danger. Doves, and a multitude of anchorites, formerly inhabited together the whole of the awful valley below:—it is now, however, deserted by the human beings, yet blue pigeons, says the traveller, still float over the abyss. Not a shrub, not a plant, not a drop of water, can be found within the enormous enclosure of the monastery. Two low and narrow gates, covered with iron and nails, were closely shut against the party: they begged admission in vain; the hour seemed a suspicious one to the Greek hermits; and al that prayers the most earnest, and menaces the most severe, could procure, was a jar of water, long-time expected, and at last lowered to them from the top of a tower eighty feet high. The poor Caloyers are obliged to watch day and night against the Arabs, whole tribes of whom often come to attack them. Their watching, however, is of small avail: their enemies possess themselves of all the issues; and the inmates of

the place are thus compelled to conclude a treaty, the single article of which provides for the payment of a contribution.

On the 2d of December our traveller quitted Jerusalem, proceeding by the village of Jeremiah towards the sea. As he approached Jaffa, by the road of the ancient Arimathea, the weather became milder still, and he breathed the perfume of orange and citron gardens, which are planted without order or art. Pleasant rivulets go murmuring amongst the rows of trees which press thickly against each other: their branches are bent down, with the weight of flowers and fruits, into the running water at their feet, where they refresh themselves, and add to the gentle noise of the streams. Noble palm-trees rise, like minarets, above these embalmed groves. This is a very different scene from that of the Cenobite monastery, and of the rocks and valleys of the Dead Sea. 'It is not possible to conceive the pleasure,' he says, 'we felt in plunging into these delicious thickets, after our eyes had been so long accustomed to spread themselves over bare and burning flats, and our ears had been struck by no pleasanter sounds than those of the shrill and incessant cries of an Arabian populace, always apparently threatening and revolting.'—p. 132.

At Jaffa our author delivered his letters of introduction to the aga, a brave, able, cunning, cruel, and ambitious Circassian, who seems to aim at acquiring some day an independent power. The Christian convent here is on a tolerably good footing with the chief of the government, owing to the adroitness of 'le Pere Curé, Juan Solar, a sharp intriguing ecclesiastic, who has made a friend of Elias Basila, a Syrian Christian, and second writer to Mehemet Aga. Le Pere Curé intrigues that his protector Elias may become prime minister; and prompts, pushes, and whispers to advance this laudable end, without ceasing. The second writer, however, is too indolent and too honest, says our author: he smokes 200 pipes a day, while he is waiting quietly till his greatness shall be thrust upon him. M. de Forbin had determined to cross Palestine, for the purpose of arriving at Damietta. The journey is far from a safe one; but the aga furnished him with a good conductor. Near the ruins of Azoth, so flourishing under the Philistines, our author fell in with a Bedouin, wandering, as he stated, without any object, and mounted on a beautiful mare, with gazelle eyes, whose praises he loudly sounded, and was delighted to hear re-echoed. He stooped over the neck of the graceful animal, spoke to it as to a favorite child, and covered it with kisses.

Ascalon is totally deserted: not one inhabitant remains within its walls. It is placed, like Naples, on an amphitheatrical slope, forming a half circle, and the sea forms the chord of the arc. The gates and ramparts still stand: the streets conduct to the squares: the wild antelope mounts the staircases of the palaces: the vast churches ring with the cry of the jackal; and bands of these animals meet in the great marketplace. They are now the sole masters of Ascalon! The Arabs, who call it Djaurah, struck by its melancholy appearance, regard it as the abode

of evil spirits. They stoutly affirm that during the night the city is often seen illuminated: that the sound of innumerable voices is heard, also the neighing of horses, the clashing of arms, and all the tumult of combats. An exquisite temple of Venus, in the Greek style, stands not far from the Gothic Christian monuments. Lady Esther Stanhope has recently made excavations at Ascalon; but the expense was found by her ladyship to be too great, and her attempts have been discontinued. M. de Forbin adds a note respecting our countrywoman, who has taken up her abode in the East:—'Lady Esther Stanhope has inhabited Syria for some years past: at present she resides in the small town of Antoura, above Lebanon. Her good actions have conquered the affections of the Bedouin Arabs; and people say, that they are very well disposed to proclaim her their queen. A ceremony, which certainly would have resembled a coronation, was prepared for her at Tadmour, the ancient Palmyra, but her modesty induced her to decline this singular triumph.' (p. 143.)

But we have been better pleased, we confess, with Mr. Buckingham's Travels in Palestine, than with any other recent publication respecting this country. 'The itineraries of Catholic devotees,' he justly remarks, 'have furnished the most ample details regarding the sanctuaries and holy places; and the names of Phocas, Quaresmius, and Adrichomius, are associated with these early labors. The extended journeys of Protestant scholars have enlarged our acquaintance with objects of more general enquiry, and the names of Maundrell, Shaw, and Pococke, stand pre-eminent among these. The profound researches of both English and French critics have laid open all the stores of learning in illustration of the ancient geography of Judea; and the works of Reland and D'Anville, are monuments of erudition and sagacity that would do honor to any country, while the labors of very recent travellers would seem to close the circle of our enquiries, by the pictures which they have given of the general state of manners and the present aspect of the country, retaining still the freshness of their original coloring. Yet, among all those who have made the Holy Land the scene of their researches, there has not been one who did not conceive that he was able to correct and add to the labors of his predecessors, and, indeed, who did not really notice something of interest which had been disregarded before. It is thus that Dr. Clarke expresses his doubts and disbelief at every step, and attempts to refute, with indignation, authorities which travellers of every age had hitherto been accustomed to venerate. And it is thus, too, that Chateaubriand confesses, with all the frankness of disappointment, that, after he had read some hundreds of volumes on the country he came to visit, they had given him no accurate conceptions of what he subsequently beheld for himself.' (Pref. p. v. vi.)

Mr. Buckingham embarked at Alexandria on the 25th of December, 1815, on board a shuktoor, a three-masted vessel peculiar to the navigation of the Syrian coast, about thirty feet in length, by fifteen in its extreme breadth, and about forty tons burden. The captain and his

crew, all together ten in number, were Syrian Arabs, professing the Greek religion, unskilful in the management of their vessel, and utterly ignorant of navigation. After a tedious and perilous voyage of thirteen days, the circumstances of which it is not necessary to detail, the vessel entered in safety the harbour of Soor, the ancient Tyre, whence he determined to prosecute his journey by land.

Of the present state of this proud mart of antiquity, whose resources of wealth and power are enumerated with so much eloquence by the prophet when proclaiming its destined fall—'whose merchants were princes—whose traffickers were the honorable of the earth,' (Isaiah xxiii. 8)—we have the following interesting particulars:—'The town of Soor is situated at the extremity of a sandy peninsula, extending out to the north-west for about a mile from the line of the main coast. The breadth of the isthmus is about one-third of its length; and, at its outer point, the land on which the town itself stands becomes wider, stretching itself nearly in right angles to the narrow neck which joins it to the main, and extending to the north-east and south-west for about a third of a mile in each direction. The whole space which the town occupies may be, therefore, about a mile in length, and half a mile in breadth, measuring from the sea to its inland gate. It has all the appearance of having been once an island, and at some distant period was, perhaps, of greater extent in length than at present, as from its north-east end extends a range of fragments of former buildings, beaten down and now broken over by the waves of the sea. Its south-western extreme is of natural rock, as well as all its edge facing outward to the sea; and the soil of its central parts, where it is visible by being free of buildings, is of a sandy nature.

'While this small island preserved its original character, in being detached from the continent by a strait of nearly half a mile in breadth, no situation could be more favorable for maritime consequence; and, with so excellent a port as this strait must have afforded to the small trading vessels of ancient days, a city built on it might, in time, have attained the high degree of splendor and opulence attributed to Tyrus, of which it is thought to be the site. On approaching the modern Soor, whether from the sea, from the hills, from the north, or from the south, its appearance has nothing of magnificence. The island on which it stands is as low as the isthmus which connects it to the main land, and, like this, all its unoccupied parts present a sandy and barren soil. The monotony of its gray and flat-roofed buildings is relieved only by the minaret of one mosque with two low domes near it, the ruins of an old Christian church, the square tower without, the town to the southward or south-east of it, and a few date-trees scattered here and there among the houses. On entering the town, it is discovered to have been walled; the portion towards the isthmus still remaining, and being entered by a humble gate, while that on the north side is broken down, showing only detached fragments of circular towers greatly dilapidated. These walls, both from their con-

fined extent and style of building, would seem to be of less antiquity than those which encompassed Tyrus in the days of its highest splendor, as they do not enclose a space of more than two miles in extent, and are of ordinary workmanship. They do not reach beyond the precincts of the present town, thus shutting out all the range to the northward of the harbour, which appears to be composed of the ruins of former buildings. The tower to the south-east is not more than fifty feet square and about the same height. It is turretted on the top, and has small windows and loop-holes on each of its sides. A flight of steps leads up to it from without, and its whole appearance is much like that of the Saracenic buildings in the neighbourhood of Cairo. At the present time the town of Soor contains about 800 substantial stone-built dwellings, mostly having courts, wells, and various conveniences attached to them, besides other smaller habitations for the poor. There are, within the walls, one mosque, three Christian churches, a bath, and three bazaars. The inhabitants are at the lowest computation from 5000 to 8000, three-fourths of which are Arab Catholics, and the remainder Arab Moslems and Turks.' (p. 47, 48.)

During the fair season, that is, from April to November, the port is frequented by vessels from the Greek islands, the coasts of Asia Minor, and Egypt, and a considerable trade is carried on in all the productions of those parts; Soor being one of the marts of supply for Damascus, for which its local situation is now, as it formerly was, extremely eligible. The mercantile people are chiefly Christians, whose dress resembled that of the same class in Cairo: the women were habited partly after the Egyptian and partly after the Turkish fashion. In the court of the house where our traveller lodged, he observed a female divested of her outer robes. 'Her garments,' he says, 'then appeared to resemble those of the Jewish women in Turkey and Egypt: the face and bosom were exposed to view, and the waist was girt with a broad girdle fastened by massy silver clasps. This woman, who was a Christian, wore also on her head a hollow silver horn, rearing itself upwards obliquely from her forehead, being four or five inches in diameter at the root, and pointed at its extreme; and her ears, her neck, and her arms, were laden with rings, chains, and bracelets. The first peculiarity reminded me very forcibly of the expression of the Psalmist, 'Lift not up thine horn on high, speak not with a stiff neck.' 'All the horns of the wicked will I cut off, but the horns of the righteous shall be exalted;' similar illustrations of which Bruce had also found in Abyssinia, in the silver horns of warriors and distinguished men. The last recalled to my memory, with equal readiness, the species of wealth which the chosen Israelites were commanded to borrow from the Egyptians, at the time of their departure from among them; and of the spoils taken in their wars with the Canaanites whom they dispossessed, when it is stated that many shekels of silver and of gold were produced on melting down the bracelets, the ear-rings, and other ornaments of the women and children whom they

had made captive. Most of the women that we saw wore also silver bells, or other appendages of precious metals, suspended by silken cords to the hair of the head, and large high wooden pattens, which gave them altogether a very singular appearance.' (p. 49, 50.)

As the state of the country rendered it necessary to Mr. Buckingham's personal security that he should have a firman from the pacha of Acre, he went thither by the common route, which has so often been described by preceding travellers as to render any notice of it unnecessary. On his arrival at Acre, he found that Suliman Pasha, the second successor of the celebrated Djézzar, had departed thence early on the morning of the preceding day, with a large body of troops, to secure the possession of the districts of Galilee, Samaria, and all Judea to the southward; while one of his confidential officers had previously marched with another body towards Damascus (the pacha of which had lately died), in order to prepare the way for his master's entrance. As it was known that Suliman would make his first halt at Jerusalem, after securing possession of its neighbourhood, the English consul recommended that our author should proceed thither, and obtain from his hand the only protection under which he could now safely travel. While he was detained at Acre, Mr. Buckingham employed his unwilling leisure in embodying such observations on it as he had been able to make, together with the information which he had obtained respecting that place from those who had been long resident there.

Several curious anecdotes are recorded by our author of the late pacha, one of which we transcribe, as it justifies the appellation of Djézzar, or the Butcher, by which that ferocious and avaricious Moslem is generally known. 'Some short time before his decease, he was conscious of the approach of death; but so far was he from showing any remorse for his past actions, or discovering any indications of a wish to make atonement for them, that the last moments of this tyrant were employed in contriving fresh murders, as if to close with new horrors the bloody tragedy of his reign. Calling to him his father-in-law, Sheikh Taha, as he himself lay on the bed of death, 'I perceive,' said he, 'that I have but a short time to live. What must I do with these rascals in my prisons? Since I have stripped them of every thing, what good will it do them to be let loose again naked into the world? The greatest part of them are governors, who, if they return to their posts, will be forced to ruin a great many poor people, in order to replace wealth which I have taken from them; so that it is best both for their own sakes, and for that of others, that I should destroy them. They will be then soon in a place where proper care will be taken of them, a very good place, where they will neither be permitted to molest any one, nor be themselves exposed to molestation. Yes, yes! that's best! Despatch them!' In obedience to the charitable conclusion of this pathetic apostrophe, twenty-three wretches were immediately added to the long list of the victims of Djézzar Pasha's cruelty; and it is said they were all of them thrown into the sea together,

as the most expeditious mode of execution. (p. 80, 81.)

On his departure from Acre, or Acre, Mr. Buckingham passed through Nazareth (of whose present state we have a pleasing account); and, while his mules were feeding at the little village of Deborah, he ascended Mount Tabor, on the summit of which is an oval plain, of about a quarter of a mile in its greatest length, covered with a bed of fertile soil on the west, and having at its eastern end a mass of ruins, seemingly the vestiges of churches, grottoes, strong walls, and fortifications; all decidedly of some antiquity, and a few appearing to be the works of a very remote age. The panoramic view from the summit he found equally beautiful and extensive. Having with difficulty escaped being plundered by some of the marauding soldiers who, at this time, infested the country, our author, on regaining the village of Deborah, was obliged to retrace his steps to Nazareth; whence he resumed his journey towards Jerusalem on the 13th of January, 1816, taking his route over Mount Carmel, through Dora (in all probability the Dor of the Scriptures. See Joshua xvii. 11.—Judges i. 27), and Cesarea, by Joppa and Ramla, which town is supposed to be erected on the site of the ancient Ramah.

Of the ancient history of Jaffa, the Joppa of the sacred writings, we have a copious and well-written account. As it now appears, this place 'is seated on a promontory jutting out into the sea, and rising to the height of about 150 feet above its level, having a desert coast to the north and south, the Mediterranean on the west, and fertile plains and gardens behind it on the east. It is walled around on the south and east, towards the land, and partially so on the north and west towards the sea. There are not more than 1000. habitations in all the town; and the number of three mosques, one Latin convent, and one Greek church, will afford a guide to estimate the relative proportions of these religious bodies to each other. There is a small fort near the sea on the west, another on the north, and a third near the eastern gate of entrance, mounting in all from fifty to sixty pieces of cannon; which, with a force of 500 horse, and nearly the same number of infantry, would enable the town to be defended by a skilful commander. The port is formed by a ledge of rocks running north and south before the promontory, leaving a confined and shallow space between these rocks and the town. Here the small trading vessels of the country find shelter from south and west winds, and land their cargoes on narrow wharfs running along before the magazines. When the wind blows strong from the northward, they are obliged to warp out, and seek shelter in the small bay to the north-east of the town, as the sea breaks in here with great violence, and there is not more than three fathoms water in the deepest part of the harbour: so accurately do the local features of the place correspond with those given of it by Josephus.' (p. 157, 158.)

On his arrival at Jerusalem, Mr. Buckingham proceeded to the Latin convent of the Terra Santa, where he met with a hearty welcome from the

procure, to whose holy care and protection the president of Nazareth had recommended him as a 'Milord Inglese, richissimo, affabilissimo, ed anche dottissimo.' The monks residing in this convent (with the exception of two Italians) were Spaniards, and displayed all the bigotry and ignorance for which the ecclesiastics of that country have long been pre-eminently distinguished. Among the news of Europe, the re-establishment of the Inquisition was spoken of, and all exulted in the hope that under so wise and pious a king as Ferdinand the church would again resume its empire, and Christianity flourish! The brightest trait which they could find in his character was, that on any application to him for money to be applied to pious purposes, if the 'Convento della Terra Santa' was named, he usually gave double the sum demanded. 'Let the inquisition reign,' said they, 'and the church will be secure. Let the cross triumph, and the Holy Sepulchre shall soon be redeemed from the hands of infidels by another crusade, in which all our injuries will be avenged.' Instead of the comfort, apparent equality, and cheerfulness, which reigned at Nazareth, and even at Ramlah, all seemed here to stand in fear of each other; gloom and jealousy reigned throughout, and the names of the padre superiore, and of the procuratore generale, were as much dreaded as they were respected. When we talked of the nature of their duties here, every one complained of them as severe in the extreme. The tinkle of the bell for service was heard at almost every hour of the day; and, besides getting up two hours before sunrise to celebrate a mass, they were obliged to leave their beds every night at half-past eleven, for midnight prayers. Nothing was talked of but suffering, and the difficulty of obedience, ardent desire to return to Europe, and a wish to be sent any where, indeed, on the out-stations, rather than to continue at Jerusalem. Not even in a solitary instance did I hear a word of resignation, or of the joy of suffering for Christ's sake, or the love of persecution, or of the paradise found in a life of mortification, so often attributed to these men. One complained 'I came here for three years only, and have been kept seven; God grant that I may be able to return home at the coming spring.' Another said, 'what can we do? we are poor; the voyage is long; and unless we have permission, and some provision made for our way, how can we think of going?' A third added, 'in Christendom we can amuse ourselves by occasional visits to friends; and, during long fasts, good fish, excellent fruit, and exquisite wines are to be had.' While a fourth continued, 'and if one should be taken sick here, either of the plague or any other disease, we have no doctor but an old frate of the convent, no aid but from a few spurious medicines, and nothing, in short, to preserve one's life, dearer than all beside; so that we must end our days unpitied, and quit the world before our time.' (p. 179, 180.) This convent is called 'Il Convento della Terra Santa,' by way of distinction, and is at the head of all the religious establishments of the Romish faith throughout the Holy Land. The superior

is immediately dependent upon the pope, but the inferior members are sent from Naples, Sicily, and the South of Spain, indiscriminately. The funds of the institution are chiefly supplied from Rome; but these supplies being interrupted, during the late war, they were dependent on the charitable donations of their flock at Jerusalem. Legacies, however, are frequently bequeathed to them by the devout in Europe; and large sums are sent to them by the monarchs in that quarter of the globe. Among these, the donations of the present king of Spain are exceedingly liberal; so much so, that, when a secretary of the British ambassador at Constantinople was sent, in 1815, with a present of £1500 from the prince regent of England, the monks did not give him the most flattering reception, telling him that the king of Spain had just before sent them about £6000 sterling!

Upwards of 100 pages are devoted to a description and investigation of the Holy Places in Jerusalem (including an excursion to Bethlehem), the actual site of which places it is impossible to identify, at this distance of time. As our traveller has added very little to the previous descriptions of Dr. Clarke (on whom he introduces some rather severe animadversions), and of viscount Chateaubriand, we shall not detain our readers with his accounts of these reputedly sacred spots, and of the various legendary tales connected with them.

But the following particulars, relative to the actual population and trade of Jerusalem, are too interesting to be omitted. From the most accurate estimate which his means of information enabled him to form, it appears that 'the fixed residents, more than one half of whom are Mahometans, are about 8000; but the continual arrival and departure of strangers make the total number of those present in the city, from 10,000 to 15,000 generally, according to the season of the year. The proportion which the numbers of those of different sects bear to each other, in this estimate, was not so easily ascertained. The answers which I received to enquiries on this point were framed differently by the professors of every different faith. Each of these seemed anxious to magnify the number of those who believed his own dogmas, and to diminish that of the professors of other creeds. Their accounts were therefore so discordant that no reliance could be placed on the accuracy of any of them. The Mahometans are certainly the most numerous, and these consist of nearly equal proportions of Osmanli Turks, from Asia Minor; descendants of pure Turks by blood, but Arabians by birth; a mixture of Turkish and Arab blood, by intermarriages; and pure Syrian Arabs, of an unmixed race. Of Europeans, there are only the few monks of the Catholic convent, and the still fewer Latin pilgrims who occasionally visit them. The Greeks are the most numerous of all the Christians, and these are chiefly the clergy and devotees. The Armenians follow next in order, as to numbers, but their body is thought to exceed that of the Greeks in influence and in wealth. The inferior sects of Copts, Abyssinians, Syrians, Nestorians, Maronites, Chaldeans, &c., are scarcely

perceptible in the crowd. And even the Jews are more remarkable from the striking peculiarity of their features and dress, than from their numbers, as contrasted with the other bodies.' (p. 260—262.)

This account varies in some degree from the estimates made by other recent travellers in Palestine. Captain (now colonel) Light, who visited Jerusalem in 1814, computed its population at 12,000; but Mr. Joliffe, who was there in 1817, states that the highest estimate makes the total amount to 25,000; of these, there are supposed to be

| | |
|-----------------|-------------------|
| Mahometans | 13,000 |
| Jews | from 3000 to 4000 |
| Greeks | 2000 |
| Roman Catholics | 800 |
| Armenians | 400 |
| Copts | 50 |

These numbers vary from the amount specified by Mr. Buckingham, but it is probable that the increased number of pilgrims, whom mistaken piety might conduct to Jerusalem in 1817, will account for the difference. Whether, however, we take its population at 15,000, or even 25,000, it is a very slender aggregate, compared with the flourishing population which the city once supported: but the numerous sieges it has undergone, and their consequent spoliations, have left no vestige of its original power.

'Jerusalem, under the government of a Turkish aga, is still more unlike Jerusalem as it existed in the age of Solomon, than Athens during the administration of Pericles, and Athens under the dominion of the chief of the black eunuchs. We have it upon judgment's record, that, before 'a marching army a land has been as the garden of Eden, behind it a desolate wilderness.' Joel ii. 3. The present appearance of Judea has embodied the awful warnings of the prophet in all their terrible reality.' Joliffe's *Letters from Palestine*, page 102. From Christmas to Easter is the period in which Jerusalem is most populous, the principal feasts of the Christmas falling between these great holidays. At the latter festival, indeed, it is crowded, and the city exhibits a spectacle nowhere else to be seen in the world. Mecca and Medina offer, perhaps, a still greater variety of persons, dresses, and tongues; yet there the pilgrims visit but one temple, and are united in one faith; while here, Jews, Mahometans, and Christians, all perform their devotions within a few yards of each other, each proudly believing that this city of the living God is holy and noble to himself, and his peculiar sect alone.

In Jerusalem there is scarcely any trade, and but few manufactures. The only one that at all flourishes is that of crucifixes, chaplets, and relics, of which, incredible as it may seem, whole cargoes are shipped off from Jaffa, for Italy, Portugal, and Spain. Religion being almost the only business which brings men of opposite quarters together here, there is much less bustle than would be produced in a trading town by a smaller number of inhabitants. This city being included within the pachalic of Damascus, is governed by a Mutesellim, appointed from

thence; and the nature of his duties, and the extent of his responsibility, are similar to those in other Turkish towns. No difference is created by the peculiar sanctity of this place, as is done by that of the Arabian cities of Mecca and Medina; for, while a governor of either of these is honored by peculiar privileges, the Mutesellim of Jerusalem ranks only as the magistrate of a provincial town. The force usually kept up here consists of about 1000 soldiers, including horse and foot. These are armed and equipped in the common Turkish fashion, and are composed of Turks, Arabs, and Albanians. The walls of the city, added to the strength of its natural position, form a sufficient defence against any attack from the armies of the country; and some few cannon, mounted at distant intervals on the towers, would enable them to repel a besieging force of Arabs, but it could offer no effectual resistance to an attack conducted on the European system of war. From the general sterility of the surrounding country, even when the early and the latter rains favor the husbandman's labours, and from the frightful barrenness that extends all around Jerusalem during the parching droughts of summer, every article of food is much dearer here than it is in any other part of Syria. The wages of the laborer are advanced in the same proportion; as the lowest rate given here to those who perform the meanest offices is about the third of a Spanish dollar per day; while, on the sea-coast of this country, it seldom exceeds a sixth, and in Egypt is never more than an eighth of the same coin. (p. 262, 263.)

The preparations for the prosecution of his journey being completed, our author bade adieu to Jerusalem on the 28th of January, 1816, in company with Mr. Bankes, whom he had met there. The route, which they had marked out to themselves, was, to cross the Jordan and pass through Jerash (the ancient Geraza) and Gamala, two cities of whose ruins they had heard much. In this excursion they traversed the countries of Bashan and Gilead, on the east of the Jordan: and this portion of Mr. Buckingham's travels is not only the most interesting part of his volume, but may also be termed entirely new. For that stream has hitherto been the boundary of all our knowledge relative to the ancient Judea, no traveller having explored the countries beyond it, except the late Dr. Seetzen and Mr. Burkhart.

The first place that received the travellers was Jericho; the road thither is rocky and wild, amidst grand and awful scenery; and it is still infested by robbers. 'The whole of this road,' says Mr. Buckingham, 'from Jerusalem to the Jordan, is held to be the most dangerous about Palestine, and, indeed, in this portion of it, the very aspect of the scenery is sufficient, on the one hand to tempt to robbery and murder, and on the other to occasion a dread of it in those who pass that way. It was partly to prevent any accident happening to us in this early stage of our journey, and partly, perhaps, to calm our fears on that score, that a messenger had been despatched by our guides to an encampment of their tribe near, desiring them to send an escort to meet us at this place. We were met here, ac

cordingly, by a band of about twenty persons on foot, all armed with matchlocks, and presenting the most ferocious and robber-like appearance that could be imagined. The effect of this was heightened by the shouts which they sent forth from hill to hill, and which were re-echoed through all the valleys, while the bold projecting crags of rock, the dark shadows in which every thing lay buried below, the towering height of the cliffs above, and the forbidding desolation which every where reigned around, presented a picture that was quite in harmony throughout all its parts.

'It made us feel most forcibly the propriety of its being chosen as the scene of the delightful tale of compassion which we had before so often admired for its doctrine, independently of its local beauty. See Luke x. 30—34.

'One must be amid these wild and gloomy solitudes, surrounded by an armed band, and feel the impatience of the traveller who rushes on to catch a new view at every pass and turn; one must be alarmed at the very tramp of the horses' hoofs rebounding through the caverned rocks, and at the savage shouts of the footmen, scarcely less loud than the echoing thunder produced by the discharge of their pieces in the valleys; one must witness all this upon the spot, before the full force and beauty of the admirable story of the Good Samaritan can be perceived. Here pillage, wounds, and death, would be accompanied with double terror, from the frightful aspect of every thing around. Here the unfeeling act of passing by a fellow creature in distress, as the Priest and Levite are said to have done, strikes one with horror, as an act almost more than inhuman. And here, too, the compassion of the Good Samaritan is doubly virtuous, from the purity of the motive which must have led to it, in a spot where no eyes were fixed on him to draw forth the performance of any duty, and from the bravery which was necessary to admit of a man's exposing himself, by such delay, to the risk of a similar fate to that from which he was endeavouring to rescue his fellow-creature.' (p. 292, 293.)

On quitting Jericho, the travellers crossed the Jordan (it appears) pretty nearly at the same ford as that which was passed by the Israelites when the river had overflowed its banks. Now, however, the stream appeared to be little more than twenty-five yards in breadth; it was extremely rapid, and its otherwise turbid waters were here tolerably clear, as well as pure and sweet to the taste, in consequence of its flowing over a bed of pebbles. From the valley of the Jordan they proceeded through the mountains of Gilead, among which they found numerous lofty plains bearing the marks of high fertility. They now entered the country of Decapolis, as it was called in the Roman division of Palestine (which is so often mentioned in the New Testament), or the province of Gaulonitis from Gaulon or Golan, its early capital. From Mr. Buckingham's description of this interesting region, we select one or two paragraphs, illustrative of the geography of the sacred volume. 'We continued our way over this elevated tract, continuing to behold, with surprise and admiration, a

beautiful country on all sides of us; its plains covered with a fertile soil, its hills clothed with forests, at every new turn presenting the most magnificent landscapes that could be imagined. Among the trees, the oak was frequently seen, and we know that this territory produced them of old. In enumerating the sources from which the supplies of Tyre were drawn in the time of her great wealth and naval splendor, the prophet says, 'of the oaks of Bashan have they made thine oars.' Some learned commentators, indeed, believing that no oaks grew in these supposed desert regions, have translated this word by alders, to prevent the appearance of inaccuracy in the inspired writer. The expression of the fat bulls of Bashan, which occurs more than once in the Scriptures, seemed to us equally inconsistent, as applied to the beasts of a country generally thought to be a desert, in common with the whole tract which is laid down in our modern maps as such, between the Jordan and the Euphrates; but we could now fully comprehend, not only that the bulls of this luxuriant country might be proverbially fat, but that its possessors too might be a race renowned for strength and comeliness of person.

'In our way, just as we came out of a thick wood and opened on an extensive view, we were surprised by a party of peasants on foot, to the number of thirty at least, all armed with muskets slung across their shoulder. These were Arabs, though they possessed scarcely any thing but the language in common with the Arabs whom we had been accustomed to see. The great features of difference observable in them were, that they were generally taller, more robust, and of finer forms, and fairer complexions. Some of them had even light eyes, and many of them brown and auburn hair, which they wore in tresses hanging over their shoulders. The dress of these men differed also both from that of the desert Arabs, and of the Syrian peasants. They wore long white shirts girded round the loins, but neither turbans nor other coverings for their heads. From retaining the beard, while the hair was suffered to hang in long and curling locks over the neck, they resembled the figures which appear in the Scriptural pieces of the great masters, and many of them reminded us of the representation of Christ himself in the principal scenes of his life. These men were cultivators of the earth, and had been occupied in the tillage of their lands, from which labor they were now returning. As they live in a state of complete independence of pachas or other governors, there are no boundaries that mark any peculiar portion of the earth as private property. Rich land is so abundant in every direction near them, that the only claim to the possession of any particular spot is that of having ploughed and sown it, which entitles the person so doing to the harvest of his toils for the present season. In all their occupations they continue to be armed, partly because their country is sometimes scoured by horse Arabs from the eastern deserts, against whom they are then called to defend themselves; and partly because it is the fashion of the country to be armed, inasmuch, that the being without weapons, of some kind or other, is always

imputed to great poverty or to cowardice.' (p. 337, 329.)

At length they reached the ruins of Jerash (or, as Dr. Seetzen terms it, *Dscherrasch*), the ancient *Geraza*: of these interesting remains we have a long description accompanied by several plates and vignettes, without the aid of which it is impossible to give any account of the beautiful reliques of ancient art that have escaped the united ravages of time, and of the Arabs. The discovery of a noble triumphal arch, though not of the chastest kind, a *naumachia* for the exhibition of sea-fights, a palace, baths, two theatres, four temples, and several Greek inscriptions, repaid the travellers for the trouble and risk which they had incurred in penetrating to this remote region. Mr. Buckingham is of opinion that Jerash is the *Gergashi* of the Hebrews.

On the 2nd of February, 1816, nearly six weeks after their departure from Jerusalem, Messrs. Buckingham and Banks reached the modern Arab settlement of *Oom-Kais* on the site of the ancient *Gamala*, whose ruins they alighted to examine. In their ascent to the hill, on the summit of which the remains of the Roman city stand, they explored numerous sepulchres, excavated in the side of the gray limestone rock, which appear to have formed its *neropolis*. Although these repositories of the dead had been violated, and innumerable sarcophagi broken, yet they discovered not fewer than 200 which were perfect; some of them were highly ornamented with garlands and wreaths; others with heads of *Apollo* and little *Cupids*, or *genii* with wings, joining hands together beneath those heads; and some with shields similar to those which the travellers had seen at *Geraza*. The city of *Gamala* appears to have been nearly square, about half a mile in its greatest length; and its breadth, perhaps, one-fourth less: it stands in a very commanding situation, and from its height enjoys a grand and extensive view. The ruins are those of two theatres and an *Ionian* temple: the prevalent orders of architecture are *Ionian* and *Corinthian*, though there are some few capitals of the *Doric* order. The stone was sometimes the gray rock of the mountain, and sometimes the black volcanic stone used in the tombs and sarcophagi. One of these ancient Roman tombs was used as a carpenter's shop; and another, into which the travellers entered, was cleansed out and used as a private dwelling; a perfect sarcophagus still remained within, which was used by the family as a chest for corn and other provisions. An affair of blood between our author's guides and the inhabitants of the vicinity of *Tiberias*, together with other circumstances, compelled him, instead of proceeding thither directly, to recross the *Jordan* and return to *Nazareth*, whence he proceeded to *Tiberias*, now called *Tabareeah*.

The fine piece of water usually called the lake or sea of *Tiberias* abounds with a great variety of excellent fish, but, from the poverty and indolence of the people who live on its borders, there is not a single boat or raft throughout its whole extent: so that the few fish that are occasionally taken are caught by lines from the shore, nets never being used. Mr. Buckingham

made an excursion along the borders of this lake, in the course of which he visited *Tal-hheun* or *Tal-hheum* (as it is variously pronounced), an Arab station standing on the site of the ancient *Capernaum*, around which he discovered various remains of what must have formerly been a very considerable settlement. The waters of the lake of *Tiberias* lie in a deep basin, surrounded on all sides with lofty hills, excepting only the narrow entrance and outlets of the *Jordan* at each extreme; for which reason long continued tempests from any one quarter are unknown here; and this like the *Dead Sea*, with which it communicates, is, for the same reason, never violently agitated for any length of time. The same local features, however, render it occasionally subject to whirlwinds, squalls, and sudden gusts from the hollow of the mountains, which, as in every other similar basin, are of momentary duration, and the most furious gust is instantly succeeded by a calm.' Luke viii. 23, 24. (p. 468.)

Mr. Buckingham bears testimony to the fidelity of *Josephus's* description of this lake, *De Bell. Jud. lib. iii. c. 13. § 7*, the features of which, he says, are drawn by the Jewish historian with an accuracy that could only have been attained by one who had resided in the country. 'The size is still nearly the same, the borders of the lake still end at the beach, or the sands, at the feet of the mountains which environ it. Its waters are still as sweet and temperate as ever, and the lake abounds with great numbers of fish of various sizes and kinds.'

'In more early times, the sea of *Galilee*, or lake of *Gennesareth*, was called the sea of *Chinnereth*, from a city of that name seated on it, belonging to the children of *Naphtali*, and the edge of this sea on the other side *Jordan*, eastward, was made the western boundary of the portion of *Gad*, who occupied all the cities of *Gilead*, and half the land of the children of *Ammon*. *Gennesareth* is most probably the original name of this sea of *Chinnereth*, gradually corrupted; *Galilee* was the name given to the lake from its situation, on the eastern borders of that division of *Palestine*; and *Tiberias*, which is its most modern name, must have been bestowed on it after the building of that city by *Herod*. This last both the town and the lake still retain, under the Arabic form of *Tabareeah*; and the present inhabitants, like the earliest ones, call their water a sea, and reckon it, and the *Dead Sea*, to the south of them, to be the two largest known, except the great ocean. The appearance of the lake, as seen from this point of view at *Capernaum*, is still grand; its greatest length runs nearly north and south, from twelve to fifteen miles, and its breadth seems to be, in general, from six to nine miles. The barren aspect of the mountains on each side, and the total absence of wood, give, however, a cast of dulness to the picture; and this is increased to melancholy by the dead calm of its waters, and the silence which reigns throughout its whole extent, where not a boat or vessel of any kind is to be found.' (p. 470, 471.)

The town of *Tabareeah* or *Tiberias* presents but few objects worthy of note, excepting the hot baths and some other remains of antiquity in its neighbourhood. Its total population does not

exceed 2,000 souls, one half of whom are Jews, principally from Europe, and the remainder are Mahometans, with the exception of about twenty Christian families of the Romish communion. The military force here rarely exceeds twenty or thirty soldiers, under the command of an aga, and there are four old cannon mounted on different parts of the walls. Provisions are by no means abundant, and therefore are generally dear : and fish, when occasionally taken by a line from the shore, are sold either to the aga, or to some rich Jews, at an exorbitant price.

In retracing his way to Nazareth, Mr. Buckingham deviated from the road, in order to visit Subassta, a humble village, on a strong hill, in a commanding and pleasant situation, being surrounded by fruitful valleys and abundance of olive trees. In its centre stood the city of Samaria, by Herod called Sebaste (of which its present name is a corruption). Here are some remains of ancient edifices, particularly of a large cathedral church attributed to the piety of the empress Helena. Nablous, or Napolose (the Sicheim of the Scriptures), is, as we have stated, a populous town, containing nearly 10,000 inhabitants, all of whom, with the exception of about fifty Greek Christians, are Mahometans : and the grounds around it bear the marks of opulence and industry. It fully occupies the valley between the two hills of Gerizim on the south, and Ebal on the north. Though a place of considerable trade with Damascus and the towns on the sea-coast, yet there were no Jews here, who remained as permanent residents. The Samaritans, of whom a remnant remained in Maundrell's time (the close of the seventeenth century), are now reduced to scarcely half a dozen, or a dozen families, who perform their sacred rites in studied seclusion and obscurity, and are, if possible, more despised here than the Jews are in other Mahometan cities.

PALETTE, *n.s.* Fr. *palette* ; Ital. *paletta*, of Lat. *pala*. A painter's color board.

Let the ground of the picture be of such a mixture, as there may be something in it of every color that composes your work, as it were the contents of your *palette*. Dryden.

Er'e yet thy pencil tries her nicer toils,
Or on thy *palette* lie the blended oils,
Thy careless chalk has half atchiev'd thy art,
And her just image makes Cleora start. Tickle.

When sage Minerva rose,

From her sweet lips smooth elocution flows,
Her skilful hand an ivory *palette* graced,
Where shining colours were in order placed. Gay.

PALEY (Dr.), sub-dean of Lincoln, and rector of Bishop Wearmouth, was born at Peterborough in 1743. His father, who held a small living in that place, soon afterwards removed to Giggleswick in Yorkshire, where he was appointed to be master of a grammar-school, and continued to act in that capacity till his death, which happened in the year 1799. Dr. Paley was educated under his father's care until he became a student of Christ College, Cambridge, in 1759. In 1763 he took the degree of bachelor of arts, and in the previous examination had the honor of appearing the first man of his year. His studies now being completed, and no other engagement offering, he went to be assistant at

Greenwich school. In that situation he remained nearly three years, and then, upon being elected a fellow of Christ College, returned to a residence in the university. His election into a fellowship of the college was very soon followed by an appointment to be one of the tutors of it. His lectures on moral and political philosophy, and on the Greek Testament, contained the outlines of the works by which he has so much benefited the world, and his old pupils preserve in their note-books some of the arguments and illustrations which have rendered them so celebrated and so useful. After his return to the university, he continued to live in it about ten years. During this time he was rather a hard worker than a hard student. To his engagement as a public tutor he added others still more numerous as a private one, and, by these united labors, was in the receipt of a very considerable income. In 1770 Dr. Paley left college, and married. He had at first a small benefice in Cumberland; then the living of Appleby in Westmoreland, worth about £300 a-year; and in a short time was promoted to a prebendal stall in the cathedral of Carlisle, together with the living of Dalston, a pleasant village situated in the neighbourhood of that city, and between it and Rose-castle, the seat of the bishop. In 1782, on the resignation of Dr. John Law, who was created an Irish bishop, he was made archdeacon of the diocese, and not long afterwards succeeded Dr. Burn, the author of the *Justice of the Peace*, &c., in the chancellorship. All these preferments were bestowed on him, either by the bishop of Carlisle, or by the dean and chapter of the cathedral church, in which Dr. Law, who was a prebendary, had the leading influence. It was while his residence was divided between Carlisle and Dalston, that Dr. Paley undertook his *Elements of Moral and Political Philosophy*. The public did not hesitate long about the reception of it. It was read with universal admiration, and editions were multiplied with a rapidity entirely unexpected by the author. It is dedicated to the bishop of Carlisle; on whose death, in 1767, archdeacon Paley drew up a short memoir of him. He soon after published his *Horæ Paulinæ*, a work which ranks him very high among the argumentative advocates of Scripture authority. The chief object of this work is to bring together, from the Acts of the Apostles, and from the different epistles, such passages as furnish examples of undesigned coincidence, and thus to infer the authenticity of the Scriptural writings, independently of inspiration. Not long after this work had made its appearance (in 1789) Dr. James Yorke, bishop of Ely, offered him the mastership of Jesus College, Cambridge, of which he has the disposal in right of his see. This was a singular instance of honorable and disinterested patronage. His lordship had never seen Dr. Paley, he had no knowledge of his friends, he was influenced solely and entirely by his well-earned reputation, and by a wish to render them serviceable in a high academical situation. His preferments in the north of England, and the engagements they imposed upon him, induced him to decline the offer, after a very long hesi-

tation, which, he has been heard to say, would probably have terminated otherwise, if he had not accidentally overlooked a small field belonging to the master of Jesus; and he expressed his gratitude to the bishop in a dedication of the Evidences of Christianity. This is one of Dr. Paley's most elaborate and successful performances. Containing a general view of the evidences of our religion, it is better adapted to the wants of the common reader than an argument, however masterly, which is confined to a single subject. It is distinguished, in an eminent degree, by that happy combination of sagacity, force, and perspicuity, which appears in all his writings. After Dr. Paley had become sub-dean of Lincoln, and rector of Bishop Wearmouth, his residence was divided between those two places, his summers being spent at the latter, and his winters at the former. He now undertook and proceeded slowly with his last work, the *Natural Theology*, which was not published till the end of the year 1804. He professes to have chosen this subject, because, with those he had already treated of, it formed a system which was complete, though its parts had been produced in an inverted order. As a writer, Dr. Paley is not remarkable for elegant periods or splendid sentiment. He seems to have been less ambitious of pleasing the ear than of informing the understanding; for if we except the dedication of the *Moral and Political Philosophy*, some chapters in the same work (particularly that on reverencing the Deity), and the conclusion of the *Natural Theology*, which contain some of the most elegant and dignified passages to be found in our language, the general character of his writings is plainness and simplicity. In private life he had nothing of the philosopher. He entered into little amusements with a degree of ardor which, when contrasted with the superiority of his mind, had a pleasing effect, and constituted a very amiable trait of his character. He was fond of company; nor was he at any time more happy than when exercising his unrivalled talents of wit and humor. He died at Bishop Wearmouth 25th May, 1805.

PALFIN (John), an eminent surgeon, anatomist, and lecturer on surgery in Ghent, the place of his birth; acquired great reputation by his learning and works. The principal of these are, 1. *A Treatise on Osteology*, in 12mo. Paris, 1731; 2. *Anatomy of the Human Body*, in 2 vols. 8vo. Paris, 1734. He died at Ghent at a great age, in 1730.

PALFREY, *n. s.* } *Fr. palefray*; *Ital. pala-*
PALFREYED, *adj.* } *freno*; *Spanish palafren.*
A small riding horse: palfreyed is using or possessed of a palfrey.

Her wanton palfrey all was overspread
With tinsel trappings, woven like a wave. *Spenser.*

The smiths and armorers on palfreys ride.

Dryden.

Such dire achievements sings the bard that tells
Of palfreyed dames, bold knights, and magic spells.

Tickel.

The damsel is mounted on a white palfrey, as an emblem of her innocence. *Addison's Spectator.*

PALICAUDCHERRY, or **PALIGHAUT**, a town in the province of Malabar, 110 miles

south from Seringapatam. Lat. 10° 50' N., long. 76° 50' E. The fort was built by Hyder Ali, on his conquest of Malabar; in the country called Paligatsberry, which then belonged to the Shekury Rajah, one of the Malabar chiefs. Around the fort are scattered many villages and bazaars, all together containing a considerable population: but there is very little appearance of a town. This small district, in the year 1800, contained, according to Mr. Hamilton, the following number of houses:—

| | |
|---------------------------------------|------|
| Occupied by the families of rajahs | 42 |
| By Christians | 13 |
| By Mahometans | 1469 |
| By Namburies (Brahmins of high caste) | 137 |
| By Puntar Brahmins | 3309 |
| By Nairs | 4294 |
| By artificers and tradesmen | 2329 |
| By Shanars or Tiars (cultivators) | 4287 |
| By fishermen | 539 |
| By people of Karnata, or Chera | 5054 |

Total houses 21,473

| | |
|-----------------------------|---------|
| Containing free inhabitants | 106,500 |
| Add Chumar, or slaves | 16,574 |

Total population 123,074

exclusive of military, camp followers, travellers, vagrants, &c. The part occupied by thick forests, and uninhabited, is very extensive, and is intersected by several branches of the Paniani River, by which, in the rainy season, the timber may be floated to the sea. About 45,000 cubical feet of teak may be procured annually, with the assistance of a large body of trained elephants. The Palighaut district was ceded to the British by Tippoo, at the peace of 1792, when its revenues were valued at 88,000 pagodas.

PALICI, or **PALISCI**, in mythology, two deities, sons of Jupiter by Thalia, whom Æschylus, according to Macrobius, calls Ætna, in a tragedy, which is lost. The nymph Ætna, when pregnant, begged Jupiter to remove her from the pursuit of Juno. Upon which he concealed her in the bowels of the earth; and, when the time of her delivery arrived, the earth opened and brought into the world two children, who were named Palici, *απο του παλιν κρηθαι*, because they came again into the world from the bowels of the earth. These deities were worshipped with many ceremonies by the Sicilians: and near their temple were two small lakes, which were supposed to have sprung out of the earth when they were born. Near these pools it was usual to take the most solemn oaths, when any wished to decide controversies and quarrels. If any of the persons who took the oaths were perjured, they were expected to be immediately punished supernaturally; and those whose oath, by the deities of the place, was sincere, departed unhurt. The Palici had also an oracle, which was consulted upon some great emergencies, and which rendered the truest and most unequivocal answers. In a superstitious age, the altars of the Palici were stained with the blood of human sacrifices; but this barbarous custom did not last long.

PALIFICATION, *n. s.* Lat. *palius*. The act or art of making ground firm with piles..

I have said nothing of *paliification* or piling of the groundplot commanded by Vitruvius, when we build upon a moist soil. *Wotton.*

PALINDROME. Gr. *παλινδρομα*, *παλιν*, and *δρομα*. A word or sentence which is the same read backward or forward: as, madam; or this sentence, Subi dura a rudibus. Some have refined upon the Palindromus, and composed verses, each word of which is the same backwards as forwards; for instance, that of Camden:—

Odo tenet mulum, madidam mappam tenet Anna.
Anna tenet mappam madidam, mulum tenet Odo.

PALINODE, *n. s.* } Gr. *παλινωδια*, *παλιν*,
PALINODY. } and *ωδη*, a song or recitation; a recitation.

I of thy excellences have oft been told;
But now my ravisht eyes thy face behold:
Who therefore in this weeping *painod*
Abhor myself, that have displeased my God,
In dust and ashes mourn.

Sandys's Parable on Job.

PALINURI PROMONTORIUM, a town of Italy, mentioned by Virgil and Velleius, with a cognominal port, at the south extremity of the Sinus Pæstanus, on the coast of Lucania, so called from Palinurus.

PALINURUS, in fabulous history, the pilot of Æneas, who fell into the sea when asleep, and was three days exposed to the tempests, and at last came safe ashore, where the cruel inhabitants of the place murdered him. His body was left unburied on the sea shore. See Virg. Æneid, lib. VI. v. 337.

PALISADE, *n. s.* & *v. a.* } Fr. *palisade*;
PALISADO. } Span. *palisado*, of
Lat. *palius*. Pales, taken collectively; paling; a single series or set of pales.

The Trojans round the place a rampire cast,
And *palisades* about the trenches placed. *Dryden.*

The wood is useful for *palisadoes* for fortifications, being very hard and durable. *Mortimer.*

The city is surrounded with a strong wall, and that wall guarded with *palisades*. *Broome.*

PALISADOES, or **PALISADES**, in fortification, are stakes made of strong split wood, about nine feet long, six or seven inches square, three feet deep in the ground, in rows about two and a half or three inches asunder, placed in the covert way, at three feet from, and parallel to, the parapet or side of the glacis, to secure it from surprise. They are also used to fortify the avenues of the open forts, gorges, half-moons, the bottoms of ditches, &c. They are usually fixed perpendicularly, though some make an angle inclining towards the ground next the enemy, that the ropes cast over them to tear them up may slip off.

PALISSE, in heraldry, a bearing resembling a range of palisades before a fortification, represented on a fosse, raising up a considerable height, and pointed, with the field appearing between them.

PALISSY (Bernard de), a Parisian artist, was born at Agen in France about 1524. He discovered the method of applying enamel to stoneware, and his manufacture excelled the finest of

the Italian. He is said next to have pursued the study of chemistry; his knowledge of which enabled him to make improvements in agriculture. He also formed the first cabinet of natural history in France, on which science he delivered lectures. He was a Protestant, and so firmly attached to his religion that during the fury of the league under Henry III., in 1584, he was committed to the bastille. The king, who had patronised him as an artist, having told him that if he did not comply with the prevailing religion he should be constrained to leave him in the hands of his enemies, Palissy replied, 'your majesty has often said that you pity me; for my part I pity you for pronouncing the words, 'I shall be constrained;' this is not speaking like a king; but let me inform you in royal language, that neither the Giusarts, your whole people, nor yourself, shall constrain a potter to bend his knee before images.' He used to say that he had no other property than heaven and earth. His works are, *Moyen de devenir riche*, &c.; *Discours admirable de la Nature des Eaux et Fontaines, des Metaux, des Sols, des Salines, des Pierres, des Terres*, &c. He died in 1590. His works and life were published at Paris in 1777 by St. Fond.

PALIURUS, in ancient geography, a river of Africa, with a town of the same name, at the western extremity of Egypt, on the Mediterranean.—*Strabo.*

PALL, *n. s.* & *v. a.* Span. *pallio*; Lat. *pallium*. (There is also a Hind. *pal*.) See **PALLIUM**. A cloak or mantle of state, civil or ecclesiastical; a covering thrown over the dead: to cloak or invest with a pall.

With princely pace,
As fair Aurora in her purple *pall*,
Out of the east her dawning day doth call;
So forth she comes. *Spenser.*

Come, thick night,
And *pall* thee in the dunest smock of hell,
That may keen knife see not the wound it makes. *Shakespeare.*

Let gorgeous tragedy
In scepter'd *pall* come sweeping by. *Milton.*
The right side of the *pall* old Egeus kept,
And on the left the royal Theseus wept. *Dryden.*

An archbishop ought to be consecrated and anointed, and after consecration he shall have the *pall* sent him. *Ayliffe.*

PALL, *v. n.* & *v. a.* (Probably from **PALE**.) To grow vapid or insipid: to make insipid or vapid; to cloy; dispirit, or weaken.

For this,
I'll never follow thy *palled* fortunes more.

Empty one bottle into another swiftly, lest the drink *pall*. *Bacon.*

Ungrateful man,
Base, barbarous man, the more we raise our love,
The more we *pall*, and cool, and kill his ardour. *Dryden.*

Beauty soon grows familiar to the lover,
Fades in the eye, and *palls* upon the sense. *Addison.*

Palled appetite is humorous, and must be gratified with sauces rather than food. *Tatler.*

Reason and reflection, representing perpetually to the mind the meanness of all sensual gratifications,

blunt the edge of his keenest desires, and *pall* all his enjoyments. *Atterbury.*

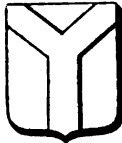
Wit, like wine, from happier climates brought,
Dashed by these rogues, turns English common draught,

They *pall* Moliere's and Lopez' sprightly strain.

Swift.

Now *pall* the tasteless meats and joyless wines
And luxury with a sigh her slave resigns. *Johnson.*

PALL, in heraldry, a figure like a Greek Y, about the breadth of a pallet; being the archiepiscopal ornament sent from Rome to the metropolitans.



PALLA, in Roman antiquity, a mantle which women wore over the gown called stola. It was borne on the left shoulder, whence passing to the other side, under the right arm, the two ends were bound under the left arm, leaving the breast and arm quite bare. It had many folds, and derived its name from *παλλω*, to shake. From this term springs the word *pall*, which denotes the rich pontifical garment worn by the popes, patriarchs, primates, and metropolitans of the Romish church over their other vestments; and which is in the shape of a band or fillet three inches broad, encompassing the shoulder, whence it has been denominated by certain writers *superhumerales*. Both behind and before are pendants, or strings, about a palm in length, with small laminae of lead rounded at the extremities, and covered with black silk with four red crosses.

PALLADINI (Archangela), a celebrated Italian paintress, born at Pisa in 1599. Her father was a painter, and she attained great excellence in portrait painting; but died young, in 1622.

PALLADINO (James), an Italian author, born at Teramo, in Naples, in 1349. He became successively bishop of Monopoli, Tarentum, Florence, and Spoleto, and legate in Poland. Among his works, the most celebrated is the *Processus Luciferi contra Jesum*. He died in Poland in 1417.

PALLADIO (Andrew), the celebrated architect, was born in 1518, at Vicenza, in Lombardy. He learned the principles of his art from Trissino, after which he studied at Rome, and on his return constructed a number of noble edifices. He was employed in various parts of Italy, particularly at Venice, where he built the palace Foscari. He died at his native place in 1580. His *Treatise on Architecture* was printed at Venice in 1570, folio; and again at London in 1715, in 3 vols. folio. In 1730 lord Burlington published some of Palladio's designs, in 1 vol. folio. This artist was likewise the author of a work entitled *Le Antichità di Roma*; and an illustration of *Cæsar's Commentaries*.

PALLADIUM, in fabulous history, a statue of the goddess Pallas. It was about three cubits high, and represented the goddess sitting and holding a pike in her right hand, and in her left a distaff and a spindle. It was said to have fallen down from heaven near the tent of Ilius, as he was building the citadel of Ilium. Others assert

that it fell at Pessinus in Phrygia. Some maintain that the palladium was made with the bones of Pelops by Abaris; but, according to Apollodorus, that it was only a piece of clock-work which moved of itself. However various the opinions of ancient authors be about this celebrated statue, it was universally allowed, that on its preservation depended the safety of Troy. This fatality the Greeks, during the Trojan war, were well aware of; and therefore Ulysses and Diomedes were commissioned to steal it. This they effected, and they were directed how to carry it away by Helenus, a son of Priam, who in this betrayed his country, because his brother Deiphobus, at the death of Paris, had married Helen, of whom he was enamoured. Minerva was enraged at the violence offered to her statue; and, according to Virgil, the palladium itself seemed to have received life and motion; and by the flashes which started from its eyes, and sudden springs from the earth, it seemed to show the resentment of the goddess. The true palladium, however, according to some, was not carried away from Troy by the Greeks, but only a statue of similar size and shape, which was placed near it, to deceive whatever sacrilegious persons attempted to steal it. The palladium, therefore, they pretend Æneas conveyed safe from Troy to Italy, and it was afterwards preserved by the Romans with the greatest secrecy and veneration, in the temple of Vesta, unknown to all but the vestal virgins. The destiny of Rome was believed to depend upon it; and there were several others made perfectly like it, to secure it from being stolen, as was that at Troy. A palladium was also placed in the citadel of Athens.

PALLADIUM, in chemistry, a new metal, first found by Dr. Wollaston, associated with platina, among the grains of which he supposes its ore to exist, or an alloy of it iridium and osmium, scarcely distinguishable from the crude platina, though it is harder and heavier.

If crude platina be dissolved in nitro-muriatic acid, and precipitated with a solution of muriate of ammonia in hot water; the precipitate washed, and the water added to the remaining solution, and a piece of clean zinc be immersed in this liquid, till no farther action on it take place; the precipitate now thrown down will be a black powder, commonly consisting of platina, palladium, iridium, rhodium, copper, and lead. The lead and copper may be separated by dilute nitric acid. The remainder being then digested in nitro-muriatic acid, and common salt about half the weight of the precipitate added on the solution, on evaporating this to dryness, by a gentle heat, the result will be, triple salts of muriate of soda, with platina, palladium, and rhodium. Alcohol will dissolve the first and second of these, and the small portion of platina may be precipitated by sal ammoniac. The solution being diluted, and prussiate of potash added, a precipitate will be thrown down, at first of a deep orange, and afterwards changing green. This, being heated with a little sulphur and borax in a crucible, will afford a metallic button of pure palladium.

This metal is of a white color, more of the appearance of platina than any other metal. It

is something harder than the above metal, being about the stiffness of jewellers' gold. It is less malleable than silver or platina, owing probably to its greater hardness. Its specific gravity, according to Dr. Wollaston, varies from 11.3 to 11.8. When heated to about 30° of Wedgewood, it assumes a blue color, owing to its combination with oxygen, in which property it has some resemblance to iron. If, however, the heat be increased, the oxygen flies off, and it re-assumes its original lustre. It does not fuse at the ordinary temperature of furnaces. Although its oxide seems to be formed at a certain temperature of the open air, it has not been procured by these means. An orange oxide is procured by precipitation from the acids, but not sufficiently pure to get the proportion of oxygen; hence we are at present unacquainted with the oxides of palladium. It does not combine with carbon, nor is it known to combine with hydrogen, nitrogen, or phosphorus.

It combines with sulphur, forming a compound fusible at a low red heat. The sulphur gradually escapes, leaving the metal in a state of purity.

Its specific gravity is from 10.9 to 11.8. It is a less perfect conductor of caloric than most metals, and less expansible, though in this it exceeds platina. On exposure to a strong heat its surface tarnishes a little, and becomes blue; but an increased heat brightens it again. It is reducible per se. Its fusion requires a much higher heat than that of gold; but, if touched while hot with a small bit of sulphur, it runs like zinc. The sulphuret is whiter than the metal itself, and extremely brittle.

Nitric acid acquires a fine red color from the palladium, but the quantity it dissolves is small. Nitrous acid acts on it more quickly and powerfully. Sulphuric acid, by boiling, acquires a similar color, dissolving a small portion. Muriatic acid acts much in the same manner. Nitro-muriatic acid dissolves it rapidly, and assumes a deep red.

Alkalis and earths throw down a precipitate from its solutions, generally of a fine orange color; but it is partly re-dissolved in an excess of alkali. Some of the neutral salts, particularly those of potash, form with it triple compounds, much more soluble in water than those of platina, but insoluble in alcohol.

Alkalis act on palladium even in the metallic state; the contact of air, however, promotes their action.

A neutralised solution of palladium is precipitated of a dark orange or brown by recent muriate of tin; but, if it be in such proportions as to remain transparent, it is changed to a beautiful emerald-green. Green sulphate of iron precipitates the palladium in a metallic state. Sulphureted hydrogen produces a dark brown precipitate; prussiate of potash, an olive-colored; and prussiate of mercury a yellowish-white. As the last does not precipitate platina, it is an excellent test of palladium. This precipitate is from a neutral solution in nitric acid, and detonates at about 500° of Fahr. in a manner similar to gunpowder. Fluoric, arsenic, phosphoric, oxalic, tartaric, citric, and some

other acids, with their salts, precipitate some of the solutions of palladium.

All the metals, except gold, silver, and platina, precipitate it in the metallic state. If this metal were more common (its price is about six times that of gold), it might be employed for medals and chemical vessels, and it might be used in place of silver in some articles of jewellery.

PALLADIUS, bishop of Helenopolis in Bithynia, and afterwards of Aspona. He was a Galatian, and born at Cappadocia. He became an anchorite in the mountain of Nebria in 388, and was consecrated a bishop in 401. He was an intimate friend of St. John Chrysostom, whom he never forsook during the time of his persecution, nor even in his exile. He went to Rome some time after Chrysostom's death, and, at the request of Lausus, governor of Cappadocia, composed the history of the Anchorites or hermits, and entitled it *Lausiaca*, after that lord, to whom he dedicated it in 420, when it was written, being then in the twentieth year of his episcopacy, and fifty-third of his age. His history was published in Greek by Meursius at Amsterdam, in 1619, and in Latin in the *Bibliotheca Patrum*.

PALLADIUS (R. T. Emilianus), an author who flourished after the decline of literature at Rome, but the precise period is not known. A treatise written by him, *De Re Rustica*, was published at Paris, in *L'Economie Rurale*, vol. 5, in 1775.

PALLANTIDES, the fifty sons of Pallas, the son of Pandion, and brother of Ægeus; who were all killed by Theseus, the son of Ægeus, whose succession they opposed.—*Plut. in Theseus*.

PALLAS, in mythology, a giant, the son of Cælus and Terra, who was killed by Minerva.

PALLAS, a common name of Minerva, from *παλλᾶς*, to brandish, in allusion to her spear.

PALLAS, a freed man of Claudius, celebrated for the power and the riches which he obtained. He advised the emperor to marry Agrippina, and to adopt her son Nero for his successor. It was through him and Agrippina that the death of Claudius was hastened, and that Nero was raised to the throne. Nero, however, discarded Pallas, and some time after caused him to be put to death, that he might obtain his wealth.

PALLAS (Peter Simon), a celebrated German modern naturalist, was born at Berlin, in 1741. After having studied medicine at Halle and Göttingen, he removed to Leyden, where he graduated M.D. in 1760. He then came to London, to improve his professional knowledge, and about 1762 returned to Berlin. At length he settled at the Hague, where he published some valuable zoological works. In 1767 he went to Russia, and was employed by the government of that country on an expedition of discovery in the Asiatic provinces. In the course of this undertaking he procured the materials for several important works on the various branches of natural history, which he afterwards published. In 1793 and 1794 he travelled in the southern provinces of Russia, and subsequently settled in the Crimea, on an estate bestowed on him by the empress. His death took place at Berlin in 1811. Among his principal works are, *Elenchus Zoophytorum*, Hag. Com., 1765; *Miscellanea Zoologica*, Hag. Com., 1766, 4to; *Spicilegia quibus novæ Ani-*

malium species Iconibus illustr., Berolin, 1767—80, 4to.; *Novæ Species Quadrupedum*, e Gli-rium Ordine, Erlang. 1778, 4to.; *Icones Insec-torum præsertim Rossie, Sibirique peculiarium*, Erlang. 1791, 4to.; *Flora Russica*, seu stirpium Imp. Rossici per Europam et Asiam indigena-rum Descriptiones et Icones, Petrop., 1784—1815, 2 vols. folio; *Illustrationes Plantarum imperfectæ vel nondum cognitarum*, Petrop., 1804—6, folio; *Linguarum totius Orbis Vocabularia comparativa*, Petrop., 1786—89, 2 vols. 4to.; *Reise durch verschiedene Provinzen des Russis-chen Reichs*, Petersb. 1771, &c. 5 vols. 4to.; *Sammlungen Historischer Nachrichten über die Mongolischen Völkerschaften*, Leips. 1779, 8vo.; *Bemerkungen auf einer Reise in die Südlichen Staathalterschaften der Russischen Reichs in den Jahren, 1793—4*, Leips. 1799—1801, 2 vols. 4to. The travels of M. Pallas have been trans-ated into French, under the title of *Voyages dans Plusieurs Provinces de l'Empire de Russie, et dans l'Asie Septentrionale*, trad. par Gautier de la Peyronie, Paris, 1788, 5 vols. 4to., and 1794, 8 vols. 8vo.; and, *Second Voyage en Rus-sie, pendant les années, 1793—4*, Paris, 1811, 4 vols. 8vo. There is also an English translation of the latter work, 1812, 2 vols. 4to.

PALLAVICINI (Ferrante), an Italian wit of considerable note, descended from a noble fami-ly in Placentia, where he was born about the close of the sixteenth century. He gave early proofs of an extraordinary genius, and quickly acquired a masterly knowledge in the elements of classical erudition. He was afterwards sent to complete his education in the monastery of Augustin friars at Milan, where he took the habit, lived much esteemed for piety as well as learn-ing, and raised great expectations of future fame; but at length he engaged in an intrigue with a young courtesan of Venice, to enjoy whose company without restraint, he obtained leave from his general to make the tour of France. Accordingly, he pretended to set out for that country; but never left Venice, but lived there privately with his mistress; and imposed upon his friends, by sending them, in letters, feigned accounts of his travels through France; also informing them of several things respecting that court, which he learned from the information of many considerable persons with whom he cor-responded. But such a series of imposition could not last. Being in want of money, he wrote for the booksellers; and, among other pieces, published a collection of Satirical Letters, the wit of which was chiefly levelled against the Spaniards, entitled *The Courier* robbed of his Mail. Though licensed by the inquisitors, the secretary of the republic of Venice refused it his imprimatur; which irritated the author so much that he published an enlarged edition of it, filled with severe invectives against, not only the Venetian secretary, but pope Urban VIII., his ne-phews, and the whole family of the Barbarini. This raised him a number of powerful enemies; who, by the treachery of one Morfu, a French-man, who pretended to be his friend, got him at last into their power; and, after a year's impris-onment at Avignon, brought him for form's sake to a trial; and, notwithstanding an excel-

lent defence, condemned him to be beheaded and he was accordingly executed, in the flower of his age. The latter part of his life had been one continued series of dissipation, debauchery, folly, and extravagance. Yet he was not without some virtues. Sincere and faithful in his friend-ships, no man was ever a more easy prey to the treachery of others. His works were published in 2 vols., with his life prefixed, at Amsterdam, in 1696.

PALLAVICINI (Sforza), a learned cardinal, born at Rome in 1607. He became a Jesuit in 1638. He was much employed by popes Inno-cent X. and Alexander VII. He wrote several works, the chief of which was a History of the Council of Trent, wherein he opposes that of F. Paul.

PALLENE, a small peninsula of Thrace or Macedonia, formerly called Phlegra. It is si-tuated near the bay of Thermæ, and contains five cities, the principal of which is also called Pallene. It was famous in the mythology for an engagement between the gods and the giants.

PALLET, *n. s.* Fr. *paillette*; Lat. *palestrus*. Written 'paillet' by Chaucer, from Fr. *paille*, straw, as Dr. Johnson conjectures. A small mean bed: also a small measure.

Why, rather, Sleep, liest thou in smoky cribs,
Upon uneasy pallets stretching thee,
And hush't with buzzing night-flies to thy slumber;
Than in the perfumed chambers of the great,
Under the canopies of costly state,
And lulled with sounds of sweetest melody?

Shakespeare.

His secretary was laid in a pallet near him for ven-tilation of his thoughts. *Wotton's Buckingham.*

If your stray attendants be yet lodged,
Or shroud within these limits, I shall know,
Ere morrow wake, or the low-roosted lark
From her thatcht pallet rouse.

Milton.

A surgeon drew from a patient in four days, twenty-seven pallets, every pallet containing three ounces.

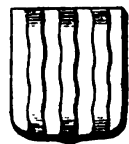
Hakewill.

PALLET, among painters, is a little oval table, or piece of wood, or ivory, very thin and smooth; on and round which the painters place the sever-ral colors they have occasion for, to be ready for the pencil. The middle serves to mix the colors on, and to make the tints required in the work. It has no handle, but, instead thereof, a hole at one end to put the left thumb through to hold it.

PALLET, among potters, crucible-makers, &c., a wooden instrument, almost the only one they use for forming, heating, and rounding their works. They have several kinds, the largest are oval, with a handle; others are round, or hollowed triangularly; others, like large knives, serving to cut off whatever is superfluous on the moulds of their work.

PALLET, in gilding, an instrument made of a squirrel's tail, to take up the gold leaves from the pillow, and to apply and extend them on the matter to be gilt.

PALLET, in heraldry, the di-minutive of the pale, being one-half of its breadth. Several pallets may be borne in one es-cutcheon, as in the annexed ex-ample. 'Argent three pallets, wavy gules, name Downes.'



PALLIAMENT, *n. s.* Lat. *pallium*. A dress or robe.

The people of Rome
Send thee by me their tribute,
This *palliament* of white and spotless hue.

Shakespeare.

PALLIATE, a name which the Romans gave to such plays as the plot, being laid in Greece, required the performers to appear in Grecian habits. It is used in contradistinction to *togate*, in which the scene was laid at Rome, and the dresses were Roman. The word is derived from *pallium*, which was a part of dress peculiar to the Greeks; whereas the *toga* belonged to the Romans only.

PALLIATE, *v. a.*

PALLIATION, *n. s.*

PALLIATIVE, *adj. & n. s.*

French, *pallier*,
from Lat. *pallium*.
To cover; disguise; excuse; extenuate: hence to ease or qualify pain: palliation is extenuation; alleviation; excuse; apology: imperfect cure: palliative, mitigatory; extenuating: and, as a noun substantive, synonymous with palliation, but of more frequent use as applied to medicines.

If the just cure of a disease be full of peril, let the physician resort to *palliation*.

Bacon's Natural History.

I saw clearly through all the pious disguises and soft palliations of some men.

King Charles.

The fault is to extenuate, palliate, and indulge.

Dryden.

Such bitter invectives against other men's faults, and indulgence or palliation of their own, shews their *seal* lies in their spleen. *Government of the Tongue.*

Consumption pulmonary seldom admits of other than a palliative cure, and is generally incurable when hereditary.

Arbutnot.

They never hide or palliate their vices, but expose them freely to view.

Swift.

It were more safe to trust to the general aversion of our people against this coin, than apply those palliatives which weak, perfidious, or abject politicians administer.

Id.

PALLID, *adj.* Lat. *pallidus*. Pale; light of color; dim.

Of every sort, which in that meadow grew,

They gathered some; the violet *pallid* blue.

Spenser.

When from the *pallid* sky the sun descends.

Thomson.

Whilst, on the margin of the beaten road,

Its *pallid* bloom sick-smelling hen-bane showed.

Harte.

And, like a withered lily, on the land

His slender frame and *pallid* aspect lay,

As fair a thing as e'er was formed of clay.

Byron.

PALLIO CO-OPERIE. It was an ancient custom, where children were born out of lawful wedlock, and their parents were afterwards married, that those children, together with the father and mother, should stand *pallio co-operti*, under a cloth, while the marriage was solemnising; which was a kind of adoption, and had the effect of a legitimization.

PALLIOT (Peter), a French engraver, printer, bookseller, and author, born at Dijon, in Normandy. His works are highly valued by literary antiquaries; particularly two tracts on Blazoning and Genealogy. His folio edition contains above 6000 escutcheons of his own engraving.

PALLIUM, in antiquity, an upper garment or mantle worn by the Greeks, as the toga was by the Romans. Each of these were so peculiar to the respective nations, that *Palliatius* is used to signify a Greek, and *Togatus* a Roman.

PALLIUM, a word often mentioned in our old historians. Durandus tells us that it was a garment made of white wool, after the following manner, viz. The nuns of St. Agnes, every year, on the feast-day of their saint, offer two white lambs on the altar of their church, during the time they sing *Agnus Dei*, in a solemn mass; which lambs are afterwards taken by two of the canons of the Lateran church, and by them given to the pope's subdeacons, who send them to pasture till shearing time, and then they are shorn, and the pall is made of their wool mixed with other white wool. The pall, being thus made, is carried to the Lateran church, and there placed on the high altar, by the deacons, on the bodies of St. Peter and St. Paul; and, after an usual watching, it is carried away in the night, and delivered to the subdeacons, who lay it up safely. And, because it was taken from the body of St. Peter, it signifies the plenitude of ecclesiastical power; and therefore it was the prerogative of popes, who pretend to be the immediate successors of that saint, to invest other prelates with it; which at first was done nowhere but at Rome, though afterwards at other places.

PALLMALL, *n. s.* Fr. *pale maille*; Lat. *pila* and *malleus*. A play in which the ball is struck with a mallet through an iron ring: and which seems to have given name to the celebrated street in Westminster of this name.

PALM, *n. s. & v. a.*

PALMIST,

PALMISTRY, *n. s.*

Fr. *palme*; Ital.,
Span., Port., and Lat.,
palma; Gr. *παλαμη*. The inner surface of the hand: hence a measure of three inches: to conceal in the hand or palm; hence to impose by juggling or fraud; to handle or stroke with the hand: palmist is one who attempts to foretell the events of a person's life by inspecting the palm of the hand: palmistry, his pretended art: Addison uses it of another kind of cheating by the hand. See below.

By this virgin *palm* now kissing thine,
I will in thine.

Shakespeare.

Drinks of extrema thin parts fretting, put upon the back of your hand, will, with a little stay, pass through to the *palm*, and yet taste mild to the mouth.

Bacon.

Henry VIII. of England, Francis I. of France, and Charles V. emperor, were so provident, as scarce a *palm* of ground could be gotten by either, but that the other two would set the balance of Europe upright again.

Id.

The same hand into a fish may close,
Which instantly a *palm* expanded shows.

Denham.

The length of a foot is a sixth part of the stature; a span one eighth of it; a *palm* or hand's breadth one twenty-fourth; a thumb's breadth or inch one seventy-second; a forefinger's breadth one ninety-sixth.

Holder on Time.

We shall not query what truth is in *palmistry*, or divination from lines of our hands of high denomination.

Brown's Vulgar Errors.

Seeking my success in love to know,

I tried the infallible prophetic way,

A poppy-leaf upon my *palm* to lay.

Dryden.

If not by scriptures, how can we be sure,
Reply'd the panther, what tradition's pure?
For you may *palm* upon us new for old. *Id.*
Palming is held foul play amongst gamesters. *Id.*

Moll White has made the country ring with several imaginary exploits *palmed* upon her.

Addison's Spectator.
Going to relieve a common beggar, he found his pocket was picked; that being a kind of *palmy* at which this vermin are very dextrous. *Id.*

Frank carves very ill, yet will *palm* all the meat. *Prior.*

With the fond maids in *palmy* he deals;
They tell the secret first which he reveals. *Id.*

Here while his canting drone pipe scann'd
The mystic figures of her hand,
He tipples *palmy*, and dines
On all her fortune-telling lines. *Cleveland.*

PALM, n. s. } *Fr. palmier*; *Ital. Span.*
PALMER, } *Port. and Lat. palma*, as
PALMERWORM, } some have conjectured
PALMETTO, n. s. } from its leaves resembling
PALMIFEROUS, adj. } the open hand. A tree of
PALMY, } great variety in its species.
PALMIFEDE. } See below. Its branches

were borne and worn as tokens of victory; hence it intends victory; triumph; superiority: a palmer is a kind of pilgrim, so called from those who formerly returned from Palestine bearing palm-branches: palmerworm, a worm covered with hair, so called, says Johnson, because he wanders over many plants: palmiferous, is bearing or abundant in palms: palmipede, web-footed; having the toes connected by a membrane (as the palmleaves): palmy is literally synonymous with palmiferous, and used for high; triumphant; magnificent, as in the extract from Shakspeare.

Get the start of the majestic world,
And bear the *palm* alone.

Shakspeare. Julius Cæsar.
In the most high and *palmy* state of Rome,
A little ere the mightiest Julius fell,
The graves stood tenantless. *Id. Hamlet.*
My sceptre, for a *palmer's* walking staff.

Shakspeare.
Nothing better proveth the excellency of this soil,
than the abundant growing of the *palm*-trees without
labour of man. This tree alone giveth unto man
whatsoever his life beggeth at nature's hand.

Raleigh.
Above others who carry away the *palm* for excellence, is Maurice Langrave of Hesse. *Peucham.*

Fruits of *palm*-tree, pleasantest to thirst
And hunger both. *Milton.*
It is described like fissipedes, whereas it is a *palmipede* or finfooted like swans. *Brown.*

A flesh fly, and one of those hairy worms that resemble caterpillars and are called *palmerworms*, being conveyed into one of our small receivers, the bee and the fly lay with their bellies upward, and the worm seemed suddenly struck dead. *Boyle.*

Thou youngest virgin, daughter of the skies,
Whose *palms* new plucked from Paradise,
With spreading branches more sublimely rise. *Dryden.*

Namur subdued is England's *palm* alone;
The rest besieged, but we constrained the town. *Id.*

She passed the region which Panchea joined,
And, flying, left the *palmy* plains behind. *Id.*

Water-fowl which are *palmipeds* are whole footed, have very long *necks*, and yet but short legs, as swans.

Ray.
There are twenty-one species of this tree, of which the most remarkable are, the greater *palm* or date-tree. The dwarf *palm* grows in Spain, Portugal, and Italy, from whence the leaves are sent hither and made into flag-brooms. The oily *palm* is a native of Guinea and Cape Verd Island, but has been transplanted to Jamaica and Barbadoes. It grows as high as the main mast of a ship. *Miller.*

Behold yon isle, by *palmer*s, pilgrims trod,
Men bearded, bald, cowed, uncowed, shod, unshod. *Pope.*

Broad o'er my head the verdant cedars wave,
And high *palm*ettes lift their graceful shade. *Thomson.*

PALM, in botany. See *PALME* and *PHENIX*. The palm has among almost all nations been regarded as an emblem of victory, and assigned as the reward of it. The reason why this tree was adopted, and made use of to represent victory, is said to be, because it is so elastic that, if pressed by the greatest weight, it will rise superior to the pressure, and be able to restore itself to its former state, appearing almost invincible.

PALM, CABBAGE. See *ARECA*.

PALM, COCOA NUT. See *COCOS*.

PALM SUNDAY, the Sunday before Easter; being so called in memory of our Saviour's triumphal entry into Jerusalem, when the multitude that attended him strewed branches of palm trees in his way. The ancients had other names for this day: for, 1. They called it *Dominica Competentium*, i. e. Sunday of the Competents; because on that day the catechumens came to ask the bishop leave to be admitted to baptism, which was conferred the Sunday following. They had also then given them the symbol or creed, to get off by heart, to be repeated to the bishop in the ceremony of baptism. 2. They called it *Capitulivium*, the Sunday of washing the head; because those who were to be baptised the following Sunday were prepared by washing their heads on this day.

PALMA, a north-west island of the Canaries, is eight leagues long, and six leagues broad, very mountainous and woody: the interior having many extensive volcanoes. It is only cultivated near the coast, and produces the best wine of the islands, a great quantity of almonds, some sugar and silk, and corn to serve its inhabitants half the year. It has a trade in silk which is considerable, and a good fishery on the African coast. Humboldt states it to contain 36,000 inhabitants.

PALMA, the capital of Majorca, is situated at the bottom of a large bay, formed by Cape Blanco and Cala Figuera. It stands on the slope of a hill; and, when viewed from the bay, presents a picturesque appearance. It is still surrounded with walls, and has on the land side a dry ditch and outworks, but is not capable of sustaining a siege. Part of the streets are narrow and ill paved, but those in the lower part of the town, and the squares, are spacious and regular. The cathedral is a large and handsome Gothic building, with beautiful windows of painted glass, and has a tower remarkable for the bold-

ness and delicacy of its architecture. The parish church of St. Michael is yet more ancient, and served for a mosque under the Moors. The government house is an irregular but large building, containing a chapel royal, an arsenal, barracks, and state prison. It has several elegant apartments. The house called de la Contratacion is a large Gothic edifice, with a beautiful hall, and is used for the meetings of merchants, as well as for balls, and other public entertainments. The town-house attracts attention by the sculpture and public ornaments on its entablature. In the inside are portraits of all the great men of Majorca, from Hannibal to Don Jayme. The clock is said to be regulated, both in marking and striking the hours, by the course of the sun and by the solstices, being perhaps the only one of the kind in the world. The private houses are on the plan of the ancient Moorish residences, which is probably the most suitable to the climate: they have on the ground floor a portico and lobby, with pillars, and some small apartments. On the first floor are large rooms without glass windows; and above all the family apartments, such as bed-rooms, kitchen, &c. In the latter there are seldom chimneys or stoves, the cooking being carried on with charcoal. The poor reside in cellars, which seldom receive air or light but by the door. See MAJORCA.

PALMA, a town of Sicily, noted for its sulphur cargoes shipped annually to England. It has a small harbour. Population 6000. Twelve miles S.S.E. of Girgenti.

PALMA, a small town in the south of Spain, in Andalusia, on the Xenil. Population 4200. Thirty-eight miles W.S.W. of Cordova.

PALMA, a town of Austrian Illyria, in Friuli, on the Natissone, near Aquileja, with 2000 inhabitants, and a fort.

PALMA, a small inland town of Portuguese Estremadura, on the right side of the river Cadon, twenty-eight miles east of Setubal.

PALMA, a river of Brasil, which runs nearly west, and enters the Paratinga, a tributary of the Tocantines.—It is also the name of an island close to the mouth of the river Plata.

PALMA, NUESTRA SENORA DE LA, a city of New Granada, in Tunja, on the east shore of the river Magdalena. The inhabitants carry on a considerable trade in sugar, sweets, and linen and cotton manufactures. Population 600 house-keepers. Fifty-four miles north-west of Santa Fe, and sixty-eight west by south of Tunja. Long. 74° 52' 30" W., lat. 5° 8' N. This is the name of several other settlements in South America.

PALME, in botany, palms. Under this name Linnæus has arranged several genera, which, although capable of a place in separate classes of his system, he chooses rather, on account of their singular structure, to place apart in an appendix to the work. See BOTANY. They are defined to be plants with simple stems, which at their summit bear leaves resembling those of the ferns, being a composition of a leaf and a branch; and whose flowers and fruit are produced on that particular receptacle or seat called a spadix, protruded from a common calyx in form of a sheath or scabbard, termed by Linnæus *spatha*.

PALMAS, CIVIDAD DE LAS, the capital of the Grand Canary Island, and the centre of all its commerce. It is the residence of a bishop, whose living is said to be worth about £10,000. The convents are numerous; and the town, watered by a rivulet, has a handsome appearance. Inhabitants 9437. Being less frequented by navigators, however, it does not equal in importance the ports of Tenerife.

PALMAS, a small town, the capital of Gomera, one of the Canaries.

PALMAS, CAPE, a promontory of West Africa, forming the entrance from the north into the Gulf of Guinea, and the western termination of the Ivory coast. Here is a road affording good shelter against south winds.

PALMER (John), an eminent actor, born in London in 1742, made his debut, under Foote, at the Haymarket theatre, and, after having performed with reputation in the country, was engaged by Garrick at Drury Lane. He gradually appeared in a great variety of parts, both in tragedy and comedy, in some of which perhaps he was never excelled. He remained at Drury Lane, sometimes visiting Liverpool in the summer, till he engaged in the scheme for erecting a new theatre in the East of London. Having been appointed manager, he laid the first stone of the new building, December 26th, 1785, and in June 1787 it was opened, but without legal authority. Mr. Palmer persevered for some time in a fruitless attempt to obtain a patent; and was obliged at last to return to Drury Lane. His unlucky project was the cause of great pecuniary embarrassments, and he was committed to the King's Bench, from which he was only liberated by a compromise with his creditors. His difficulties continuing, he purposed to emigrate to America; and went with that view to Edinburgh, but afterwards relinquished his scheme. Towards the close of his life he passed the summer season in the country, and his last engagement was at Liverpool. At the theatre there, on the 2d of August 1798, while performing *The Stranger*, he fell on the stage exclaiming, in the words of the drama, 'There is another and a better world' and almost immediately expired. His distressed circumstances, the recent loss of a son by death, and other misfortunes, had preyed greatly on his spirits.

PALMER (John), the projector of the mail coaches, was a native of Bath, where he at first was employed in a common brewery. After this, he solicited and obtained a patent for a theatre, which concern proved eminently successful. To elicit theatric talent he travelled much on horseback; and the necessity of despatch, but, above all, the insecurity of the ordinary mode of conveying the mails, inspired Mr. Palmer with the idea of transmitting letters by coaches. He succeeded in his object, though not without great opposition; but the utility of the plan soon became manifest, and he was made comptroller general of the post-office, with a salary of £1500 a year. But in 1792 he was suspended, and lost the benefit to which he was entitled for the advantage he had rendered to the public. At length, on application to parliament, he received a compensation; though a very in-

adequate one, for the per centage which he was to have received in case his plan succeeded. He died in 1818.

PALMERSTON ISLAND, an island of the South Pacific Ocean, discovered by captain Cook, and visited by captain Wilson in the missionary ship *Duff*, who states it to consist of a group of small islets, eight or nine in number, connected together by a reef of coral rocks, and lying in a direction nearly circular. 'The islet we landed upon,' he says, 'is not a mile in circuit, and at high water is not more than four or five feet above the level of the sea. The soil is coral sand, with an upper stratum of blackish mould produced from rotten vegetables. All the inner area of the islet is covered with cocoa-nut trees, which, decaying and falling successively, form a thick underwood: without these, near to the beach, are the wharra-tree, and others of various sorts. We saw a vast number of men of war birds, tropic birds, and boobies. Among the trees there was plenty of red crabs, dragging after them a shell in form of a periwinkle, but longer, being in diameter about two or three inches. We also saw the beautiful submarine grotto described in Cook's third voyage. At one part of the reef which bounds the lake within, almost even with the surface, there is a large bed of coral, which affords a most enchanting prospect; its base, which is fixed to the shore, extends so far that it cannot be seen, so that it appears to be suspended in the water. The sea was then unruffled, and the refulgence of the sun exposed the various sorts of coral in the most beautiful order; some parts luxuriantly branching into the water, others appearing in a vast variety of figures, and the whole heightened by spangles of the richest colors, glowing from a number of large clams interspersed in every part. Even this delightful scene was greatly improved by the multitude of fishes that gently glided along, seemingly with the most perfect security; their colors were the most beautiful that can be imagined, blue, yellow, black, red, &c., far excelling any thing that can be produced by art.' There are no inhabitants on the island; but plenty of rats, which the missionaries suppose must have been drifted here on some hollow tree or root. Long. 163° 10' W., lat. 18° 4' S.

PALMETTO, in botany. See *CHAMEROPS*.
PALMIPEDES, in ornithology, the third order in Mr. Latham's system; comprehending web-footed birds; which that ingenious ornithologist found it necessary to introduce between Linnaeus's orders of *picæ* and *grallæ*, answering to the *anseræ* of Linnaeus. Latham subdivided this order into two divisions; viz. *semipalmati* and *palmati*, in which he is followed by Kerr. The former have long legs, and their feet only half-webbed; the body is conical and somewhat flattened; the thighs are naked on their lower halves; the legs are very long; the feet are fitted for wading; and the toes are only connected together at their posterior parts by a membrane. They mostly pair in breeding time, and build their nests on the ground. They feed on fish and insects. This division contains three genera. The latter have short legs, a smooth bill, covered with a membranous skin, and increasing

in size towards the point. The feet are fitted for swimming, having short legs, thin, or compressed laterally; and the toes are all compressed to their ends by an interposed membrane. They are mostly polygamous; they build their nests on the ground; they live much in the water, and the young are soon able to provide for themselves.

PALMUS, a long measure used both by the Greeks and Romans. The Grecian palmus, called also *yopov*, was of two sorts; the greater, which contained nine finger-breadths, and the less which contained four. The Roman palmus was also of two kinds; the greater, which contained twelve finger-breadths, or eight and a half inches English; and the less, which contained four finger-breadths, or nearly three inches English. The great palmus was taken from the length of the hand or span; the less from the breadth of it.

PALMYRA, a noble city of ancient Syria, now in ruins, supposed to have been the 'Tadmor in the wilderness' built by Solomon (1 Kings, ix. 18, 2 Chron. viii. 4, and Josephus, Ant. Jud. lib. 1), though this is much controverted by many learned men. For the world has been long and justly astonished to find in the Desert of Syria, at a distance from the sea, with only a very precarious and scanty supply of water, and without a particular connexion with any great monarchy, ruins of a city more extensive and splendid than Rome itself, the deposit of all the arts which Greece in its most flourishing periods could afford.

Tadmor was situated where two hills converged, and beyond the point where they approached. These hills afforded water, and the aqueducts through which it was brought from them were discovered and described by Mr. Wood. Though the other towns now in ruins afford some remains of luxury and opulence, yet in these respects they are much inferior to Palmyra. 'The two springs of fresh water it possesses,' says Volney, 'were a powerful inducement in a desert every where else so parched and barren. These, doubtless, were the principal motives which drew the attention of Solomon, and induced that commercial prince to carry his arms so remote from the limits of Judea.' 'He built strong walls there,' says the historian Josephus, 'to secure himself in the possession, and named it Tadmor, which signifies the place of palm trees.' Hence it has been inferred that Solomon was its first founder; but we should, from this passage, rather conclude that it was already a place of known importance. The invasion of Tadmor by that prince throws a great light on the history of this city. The king of Jerusalem would never have carried his attention to so distant and detached a spot without some powerful motive of interest; and this interest could be no other than that of an extensive commerce, of which this place was already the emporium. This commerce extended itself to India, and the Persian Gulf was the principal point of union. From the nature of the commodities, from the requisite assistance of the Tyrians, and other forcible arguments, M. Volney infers that the Persian Gulf was the centre

of the most ancient commerce of the eastern world; and that it was with a view of obtaining a shorter route, by the Euphrates, that Solomon turned his attention to Tadmor, distant but three days' journey from it.

'An ancient historian,' says Volney, 'who has informed us that Nabuchodonosor, before he laid siege to Jerusalem, took possession of Tadmor, clearly indicates that the latter city acted in concert with the two neighbouring capitals, Tyre and Jerusalem. Their gradual decline became, under the Persian empire and the successors of Alexander, the efficient cause of the sudden greatness of Palmyra in the time of the Parthians and Romans; she had then enjoyed a long peace for many centuries, which allowed her inhabitants to erect those monuments of opulence whose ruins we still admire.' The verdant part of the ground was, perhaps, in remote times far more extensive than it is at present, the sands having without doubt encroached in a considerable degree on the tract calculated for bearing the fruits of the earth. A place possessed of the advantages we have mentioned was soon made a point of resort for the caravans by which the various rich commodities of India were transported to European countries. Palmyra thus grew to be an independent and wealthy city; and appears to have been permitted by the Romans, during their Parthian wars, to maintain a strict neutrality. Trajan, however, incorporated it with the imperial Roman state, and it should seem that during the period in which it held the subordinate rank of a Roman colony (namely, for a century and a half subsequently), those temples and palaces of Grecian architecture, whose widely extended ruins have occasioned so much speculation, were erected.

In old times Palmyra was doubtless encompassed by palms and fig trees, and it might probably have been reduced to its present forlorn and miserable appearance by the oceans of sand drifted over it by whirlwinds. The walls of the city are flanked with square towers; and are of the extent of three miles in circumference. But there is no authentic history of Palmyra till after the captivity of the emperor Valerian by the Persians. It is first mentioned by the Roman historians, as a place which Marc Antony attempted to plunder, upon pretence that it had not observed a just neutrality between the Romans and Parthians. Pliny takes notice of it, as situated in a rich soil, among pleasant streams, and separated from the rest of the world by a vast sandy desert, which had preserved its independence between Parthia and Rome. After the captivity of Valerian, it was become an opulent city, to which its situation in the vicinity of the Roman and Parthian empires greatly contributed; as the caravans, going to or returning from the east, frequented the place, and thus rendered it a considerable seat of merchandise. But, when the defeat and captivity of Valerian had so much weakened the empire that the Persians seemed to be in a fair way of becoming masters of all the eastern provinces, the Palmyrenians began to attempt recovering their liberty. Odenatus, prince of Palmyra, sent a polite letter to Sapor on his return, accompanied with con-

siderable presents; but by that haughty conqueror his letter and embassy were treated with the most provoking contempt. The presents were thrown into the Euphrates; and to his letter Sapor replied, That his insolence in presuming to write to his lord was inexcusable; but, if he could atone for it in any way, it would be by presenting himself before the throne bound hand and foot. Upon this Odenatus was so provoked that he swore either to bring down the pride of the haughty conqueror, or die in the attempt. Accordingly, having assembled what forces he could, he fell upon the Persians, destroyed a great number of them, took a great part of their baggage, with Sapor's queen, and some of his concubines. But though the Persians were often vanquished, and the independency of Palmyra often established, Valerian was never released from his captivity, though Odenatus earnestly endeavoured to rescue him from his enemies. Odenatus enjoyed his sovereignty but a short time; being murdered by his nephew, who was soon after put to death by Zenobia, the widow of Odenatus.

Zenobia was possessed of very extraordinary endowments both of body and mind. Immediately on the murder of her husband, she assumed the government, avenged his death, and soon strengthened herself so much that she resolved to submit neither to the Roman nor Persian power. Arabia, Armenia, and Persia, dreaded her enmity and solicited her alliance. To the dominions of Odenatus, which extended from the Euphrates to the frontiers of Bithynia, she added the inheritance of her ancestors, the populous and fertile kingdom of Egypt. The emperor Claudius II. acknowledged her merit, and was content that, while he pursued the Gothic war, she should enjoy the dignity of the empire in the east. The conduct, however, of Zenobia, was attended with some ambiguity. She blended with the popular manners of Roman princes the stately pomp of the courts of Asia, and exacted from her subjects the same adoration that was paid to the successors of Cyrus. She bestowed on her three sons a Roman education, and often showed them to the troops adorned with the imperial purple. For herself she reserved the diadem and title of queen of the east. When Aurelian passed over into Asia, his presence restored obedience to Bithynia, already shaken by the arms of Zenobia. Advancing at the head of his legions, Ancyra submitted, and he was admitted into Tyana, after an obstinate siege, by the treachery of a perfidious citizen. The generous though fierce Aurelian abandoned the traitor to the rage of the soldiers: a superstitious reverence induced him to treat with lenity the countrymen of Apollonius the philosopher. Antioch was deserted on his approach; till he recalled the fugitives, and granted a general pardon to all who, from necessity, had fought for the Palmyrenian queen. The unexpected mildness of such conduct reconciled the Syrians, and, as far as the gates of Emesa, the people submitted to his arms. Zenobia, however, opposed the emperor's approach. The fate of the east was decided in two great battles; the first fought near Antioch, the second near

Emesa. In both, the queen of Palmyra animated the armies by her presence, and devolved the execution of her orders on Zabdas, who had already signalised his military talents by the conquest of Egypt. The numerous forces of Zenobia consisted for the most part of light archers, and of heavy cavalry clothed in complete steel. The Moorish and Illyrian horse of Aurelian were unable to sustain the ponderous charge of their antagonists. They fled in real or affected disorder, engaged the Palmyrenians in a laborious pursuit, harassed them by a desultory combat, and at length discomfited this impetuous body of cavalry. The infantry, when they had exhausted their quivers, remained exposed to the swords of the legions. After the defeat of Emesa, Zenobia found it impossible to collect a third army. As far as the frontier of Egypt, the nations subject to her empire had joined the standard of the conqueror. Palmyra was her last resource. She retired within its walls; made every preparation for a vigorous resistance; and declared, with the intrepidity of a heroine, that the last moment of her reign and of her life should be the same. In his march over the sandy desert, between Emesa and Palmyra, Aurelian was perpetually harassed by the Arabs; nor could he always defend his army, and especially his baggage, from those flying troops of daring robbers. The siege of Palmyra was an object far more difficult and important; and the emperor, who, with incessant vigor pressed the attacks in person, was himself wounded with a dart. 'The Roman people,' says Aurelian, in an original letter, 'speak with contempt of the war which I am waging against a woman. They are ignorant both of the character and of the power of Zenobia. It is impossible to enumerate her warlike preparations, of stones, of arrows, and of every species of missile weapons. Every part of the walls is provided with two or three balista, and artificial fires are thrown from her military engines,' &c. Aurelian at last judged it prudent to offer terms of an advantageous capitulation: to the queen, a splendid retreat; to the citizens, their ancient privileges. His proposals were obstinately rejected. Zenobia hoped, that in a short time famine would compel the Roman army to repossess the desert; and that the kings of the east, particularly the Persian monarch, would arm in the defence of their natural ally. But the death of Sapor distracted the councils of Persia; and the inconsiderable succors that attempted to relieve Palmyra were easily intercepted. The Roman camp was increased by the return of Probus with his victorious troops from the conquest of Egypt. It was then that Zenobia resolved to fly. She mounted the fleetest of her dromedaries; and had reached the banks of the Euphrates, about sixty miles from Palmyra, when she was overtaken by Aurelian's light horse, seized, and brought back a captive. Her capital soon after surrendered, and was treated with unexpected lenity. When the Syrian queen was brought into the presence of Aurelian, he sternly asked her, How she had presumed to rise in arms against the emperors of Rome? The answer of Zenobia was a prudent mixture of respect and

firmness: 'Because I disdained to consider as Roman emperors an Aureolus or a Gallienus. You alone I acknowledge as my conqueror and my sovereign.' But the courage of Zenobia deserted her in the hour of trial; she trembled at the clamors of the soldiers, who called aloud for her immediate execution; forgot the bold despair of Cleopatra, which she had proposed as her model, and ignominiously purchased life by the sacrifice of her fame and her friends. It was to their councils, which governed the weakness of her sex that she imputed the guilt of her obstinate resistance; it was on their heads that she directed the vengeance of the cruel Aurelian. The fame of Longinus, who was included among the numerous and perhaps innocent victims of her fear, will survive that of the queen who betrayed, or the tyrant who condemned him. Genius and learning were incapable of moving a fierce unlettered soldier, but they had served to elevate and harmonise the soul of Longinus. Without uttering a complaint, he calmly followed the executioner, pitying his unhappy mistress, and comforting his afflicted friends.

Returning from the conquest of the east, Aurelian had already crossed the straits which divide Europe from Asia, when he was provoked by the intelligence that the Palmyrenians had massacred the governor and garrison which he had left among them, and erected the standard of revolt. Without delay, he once more turned towards Syria. Antioch was alarmed by his rapid approach, and the helpless city of Palmyra felt the irresistible weight of his resentment. We have a letter of Aurelian himself, in which he acknowledges, that old men, women, children, and peasants, had been involved in that dreadful execution which should have been confined to armed rebellion: and, although his principal concern seems directed to the re-establishment of a temple of the sun, he discovers some pity for the remnant of the Palmyrenians, to whom he grants the permission of rebuilding and inhabiting their city. But it is easier to destroy than to restore. The seat of commerce, of arts, and of Zenobia, gradually sunk into an obscure town, a trifling fortress, and at length a miserable village. Little is known concerning the fortunes of Palmyra since the time of Mahomet, except that it was considered as a place of strength; and that in the twelfth century there were 2000 Jews in it.

The company with whom Mr. Wood, the publisher of *The Ruins of Palmyra*, travelled, arrived at the end of the plain, where a ridge of barren hills, by which it was divided on the right and left, seemed to meet; between them there was a vale, through which an aqueduct formerly conveyed water to Palmyra. On each side of this vale they remarked several sepulchres of the ancient Palmyrenes, which they had scarcely passed, when the hills opening on a sudden, they discovered such piles of ruins as they had never seen. They were all of white marble; and, beyond them, towards the Euphrates, was a wide level, stretching farther than the eye could reach, totally desolate, and without bounds. After having gazed some time upon this prospect, which rather exceeded than fell short of their expecta-

tions, they were conducted to one of the huts of the Arabs, of which there were about thirty in the court of the great temple. The inhabitants of both sexes were well shaped, and the women, though very swarthy, had good features. They were veiled, but did not so scrupulously conceal their faces as the eastern women generally do. They painted the ends of their fingers red, their lips blue, and their eye-brows and eye-lashes black. They had large rings of gold or brass in their ears and nostrils.

These celebrated ruins consist of temples, palaces, and porticoes of Grecian architecture; and lie scattered over an extent of several miles. They were accidentally discovered by some English travellers from Aleppo above a century ago. The most remarkable of them is the temple of the Sun, of which the ruins are spread over a square of 220 yards. It was encompassed with a stately wall, built of large square stones, and adorned with pilasters within and without, to the number of sixty-two on a side. Within the court are the remains of two rows of noble marble pillars thirty-seven feet high, with their capitals of most exquisite workmanship. Of these only fifty-eight remain entire, but they appear to have gone round the whole court, and to have supported a double piazza. The walks opposite the castle appear to have been spacious. At each end of this line are two niches for statues, with their pedestals, borders, supporters, and canopies, carved with the utmost propriety and elegance. The space within this enclosure seems to have been an open court, in the middle of which stood the temple encompassed with another row of pillars of a different order, and much taller, being fifty feet high; but of these sixteen only remain. The whole space contained within these pillars is fifty-nine yards in length, and nearly twenty-eight in breadth. The temple is thirty-three yards long, and thirteen or fourteen broad. It points north and south; and exactly in the middle of the building, on the west side, is a most magnificent entry, on the remains of which are some vines and clusters of grapes, carved in the most masterly imitation of nature that can be conceived. Just over the door are discerned a pair of wings, which extend its whole breadth; but the body, whether of an eagle, or an angel, is destroyed. The north end of this temple is adorned with the most curious fret-work and bas-relief; and in the middle there is a dome or cupola about ten feet diameter. North of this place is an obelisk, consisting of seven large stones, besides its capital. It is about fifty feet high; and, just above the pedestal, is twelve feet in circumference. About a quarter of a mile from this pillar, to the east and west, are two others, besides the fragment of a third. About 100 paces from the middle obelisk is a magnificent entry to a piazza, which is forty feet broad, and more than half a mile long, enclosed with two rows of marble pillars twenty-six feet high, and eight or nine in compass. Of these there still remain 129, but there must originally have been no less than 560. The upper end of the piazza was closed by a row of pillars. To the left are the ruins of a stately banquetting-house, built of better marble, and finished with yet

greater elegance, than the piazza. The pillars which supported it were of one entire stone. It measures twenty-two feet in length, and in compass eight feet nine inches. In the west side of the piazza are several apertures for gates into the court of the palace. Each of these was adorned with four porphyry pillars, placed by couples in the front of the gate facing the palace, two on each side. Two of these only remain entire. They are thirty feet long, and nine in circumference. On the east side of the piazza stand a great number of marble pillars, some perfect, but the greater part mutilated. At a little distance are the remains of a small temple, without a roof. Before the entry, which looks to the south, is a piazza supported by six pillars, two on each side of the door, and one at each end. The pedestals of those in front have been filled with inscriptions, both in the Greek and Palmyrene languages, which are become totally illegible. Among these ruins are many sepulchres. They are all square towers, four or five stories high. There is a walk across the whole building, the space on each hand is subdivided into six partitions by thick walls. The space between the partitions is wide enough to receive the largest corpse; and in these niches there are six or seven piled upon one another. Many inscriptions have been found at Palmyra, which have occupied much of the attention of the learned. See Barthelemy's *Reflections on the Palmyrene Alphabet*, published at Paris in 1754; *An Explication of the Inscriptions at Palmyra* hitherto published by John Swinton, of Christ Church, Oxford; *Philosophical Transactions*, No. 217 and 218; *Ancient Universal History*, Vol. 1; and, above all, the *Ruins of Palmyra, or Tadmor in the Desert*, published by Mr. R. Wood, who, with M. Bouverie and Mr. Dawkins, travelled thither in 1751. The result of their observations was published in 1753, in the form of an atlas. The ruins of this once mighty and celebrated city are represented in fifty-seven copper plates, sixteen by twelve inches, printed on imperial paper. They are admirably executed; Palmyra was visited by Mr. Bruce, before his journey into Abyssinia. Before he came in sight of the ruins, he ascended a hill of white gritty stone, in a very narrow winding road; but, on getting up to the top, he was struck with the most stupendous sight which, he believes, ever mortal saw. The whole plain below, which is very extensive, was so covered with magnificent buildings that they seemed to touch one another. All of them are finely proportioned, and composed of white stones, which at that distance appeared like marble.

In the neighbourhood of Palmyra are some salt-marshes; and to the adjacent country a trade is carried on in kelp from Tripoli in Syria. Respecting the latitude and longitude there are various opinions. Before Mr. Bruce left Palmyra, he observed its latitude with a reflecting quadrant of Hadley, but, as the instrument was out of order, he could not determine it exactly. In his opinion, however, $33^{\circ} 58'$ is the latitude. From such observations as he could make on the longitude, he concluded it to be $37^{\circ} 9' E.$ of Greenwich. Mr. R. Wood makes the lat. 34°

N. That which appears to be nearest the truth is long. 38° 50' E., lat. 33° 20' N. It stands about fifty leagues south-east of Aleppo, as much from Damascus, and twenty leagues west of the Euphrates.

PALMYRAS POINT, the south point of Balasore Bay, Bengal, is a low point, covered with palm-trees, and on each side of it a river, that on the south being navigable for small vessels. The bay of Balasore has but little depth, and the great danger here is of mistaking Cape False for the Point. No ship should enter Balasore roads between Lady-day and Midsummer, and at all seasons a pilot should be taken on board. The East India Company have lately erected a light-house here. Long. 87° 5' E., lat. 20° 44' N.

PALNAUD, a district of the Carnatic, Hindostan, situated principally between 16° and 17° of N. lat., and on the south side of the Kistnah. This district was ceded by the nabob of the Carnatic to the British, in 1801, and is now comprehended in the collectorship of Guntoor. The chief towns are Macheria, Timerycotta, and Curumconda.

PALO, a town of Diarbekir, Asiatic Turkey, is situated on the edge of a mountain, upon the banks of the Euphrates. The top of the mountain is covered with ruins, supposed to be those of Balisbiga; and quantities of old coins and medals are continually dug up here. The present population of Palo is about 8000 Turks, Armenians, and Koords; but the town is ill built, and subject to earthquakes. The Euphrates is here extremely rapid. Sixty miles north of Diarbekir.

PAL'PABLE, *adj.* } Fr. *palpable*; Latin
PALPABILITY, *n. s.* } *palpor*. Perceptible to
PAL'PABLENESS, } the touch; hence easily
PAL'FABLY, *adv.* } detected; gross; coarse;
PALPA'TION, *n. s.* } plain: palpability and palpableness are synonymous, expressing the state or quality of being perceived by the touch; plainness; obviousness: palpably is the corresponding adverb: palpation (of which we find no instance) the act of feeling.

That grosser kind of heathenish idolatry, whereby they worshipped the very works of their own hands, was an absurdity to reason so *palpable*, that the prophet David, comparing idols and idolaters together, maketh almost no odds between them.

Hooker.

Art thou but
A dagger of the mind, a false creation?
I see thee yet in form as *palpable*,
As this which now I draw.

Shakspeare. Macbeth.

Clodius was acquitted by a corrupt jury, that had *palpably* taken shares of money. Before they gave up their verdict, they prayed of the senate a guard, that they might do their consciences justice.

Bacon.

Darkness must overshadow all his bounds,
Palpable darkness! and blot out three days.

Milton.

Since there is no such dissimilitude between cause and effect in the more *palpable* phenomena, we can expect no less between them and their invisible effects.

Glanville.

They would no longer be content with the invisible monarchy of God, and God dismissed them to the *palpable* dominion of Saul.

Holyday.

He must not think to shelter himself from so *palpable* an absurdity, by this impertinent distinction.

Tillotson.

Having no surer guide, it was no wonder that they fell into gross and *palpable* mistakes.

Woodward's Natural History.

He first found out *palpability* of colors; and, by the delicacy of his touch, could distinguish the different vibrations of the heterogeneous rays of light.

Mart. Scribblers.

MYR. And felt you not this a mere vision!

SAR.

No:

It was so *palpable*, I could have touched them.

I turned from one face to another, in

The hope to find at last one which I knew

Ere I saw theirs: but no—all turned upon me.

Byron.

PALPAH, a mountainous and barren district of Northern Hindostan, situated between 28° and 29° of N. lat. It forms one of the principalities subject to the rajah of Nepaul, called the territories of the twenty-four rajahs. It is intersected by the Gunduck.

PALPAH, the capital of the above-mentioned district, the residence of a Hindoo chief named Mehadut Sein, who is tributary to Nepaul. It is situated among the mountains on the banks of the Gunduck River. Long. 82° 55' E., lat. 28° 11' N.

PALPITATE, *v. a.* } French *palpiter*; Lat.

PALPITATION, *n. s.* } *palpito* (à Gr. *παλλω*).

To pant; throb; beat as the heart; flutter: the substantive corresponding.

The heart strikes five hundred sort of pulses in an hour; and hunted into such continual *palpitations*, through anxiety and distraction, that fain would it break.

Harvey.

I knew the good company too well to feel any *palpitations* at their approach.

Taiter.

Anxiety and *palpitations* of the heart are a sign of weak fibres.

Arbuthnot on Aliments.

Her bosom heaves

With *palpitations* wild.

Thomson's Spring.

While, as beautiful as May,

A female child of ten years tried to stoop

And hide her little *palpitating* breast

Amidst the bodies killed in bloody rest. *Byron.*

PALPITATION OF THE HEART. See **MEDICINE**, Index.

PALSGRAVE (John), a learned writer, who flourished in the reigns of Henry VII. and Henry VIII. He received his grammatical learning at London, his native place. He studied logic and philosophy at Cambridge, where he became A. B., after which he went to Paris, where he spent several years in study, took the degree of A. M., and acquired such excellence in the French tongue that, in 1514, when a treaty of marriage was negotiated between Louis XII. of France, and the princess Mary, sister of Henry VIII. of England, Mr. Palsgrave was appointed to be tutor in that language. But Louis XII. dying soon after his marriage, Palsgrave attended his fair pupil back to England, where he taught French to the young nobility, obtained preferment in the church, and was appointed one of the king's chaplains in ordinary. In 1531 he settled at Oxford, and in 1582 was made A. M. and B. D. He was much esteemed for his learning; and, though an Englishman,

was the first who reduced the French tongue to grammatical rules, or fixed it to any kind of standard. This he executed with great ingenuity, in a large work which he published in that language at London, entitled *L'Eclaircissement de la Language Françoise*, in three books, thick folio, 1530, with a large English introduction; so that the French nation stand originally indebted to England for that universality which their language at present possesses. He translated into English a Latin comedy called *Acolastus*, written by one William Fullonius, an author then living at Hagen in Holland. He died in 1540.

PALSY, *n. s.* Lat. *paralysis*, of which it seems a corruption. A privation of animal motion or feeling.

The *palsy*, and not fear, provokes me.
Shakespeare.

Palled, thy blazed youth
Becomes assuaged, and doth beg the alms
Of *palsied* old. *Id. Measure for Measure.*

A *palsy* may as well shake an oak, as shake the delight of conscience. *South.*

Though she breathes in a few pious peaceful souls, like a *palsied* person, she scarce moves a limb.
Decay of Piety.

Let not old age long stretch his *palsied* hand;
Those who give late are importuned each day. *Gay.*

There is a threefold division of a *palsy*; a privation of motion, sensation remaining; a privation of sensation, motion remaining; and, lastly, a privation of both together. *Quincy.*

Eneas! Jesus, the true Messiah, in whose name I preach and act immediately healeth thee!—And upon this the *palsy* left him, and the disabled man was all at once so strengthened that he arose immediately and did it. *Doddridge on Acts ix.*

PALSY. See **MEDICINE**, Index.

PALTER, *v. n. & v. a.* As Skinner and
PALTERER, } Minshew think,
PALTRINESS, } from Fr. *poltron*.
PALTRY, *adj.* } Mr. Thomson more

probably from Span. *falter*, or *baldar* (barb. Lat. *palitare*), *fallo*. To shuffle; shift; deal insincerely; deceive: according to Ainsworth it has also been used for to squander, as 'he falters his fortune': a palterer is a shuffler; insincere dealer or negotiator: paltry, low; tricky; sordid; mean.

Be these juggling fiends no more believed,
That *patter* with us in a double sense;
That keep the word of promise to our ear,
And break it to our hope. *Shakespeare. Macbeth.*
Then turn your forces from this *paltry* siege,
And stir them up against a mightier task.

Shakespeare.
Whose compost is *paltry* and carried too late,
Such husbandry useth that many do hate. *Tusser.*

For knights are bound to feel no blows
From *paltry* and unequal foes. *Hudibras.*
It is an ill habit to squander away our wishes
upon *paltry* fooleries. *L'Estrange.*

When such *paltry* slaves presume
To mix in treason, if the plot succeeds,
They're thrown neglected by; but, if it fails,
They're sure to die like dogs. *Addison's Cato.*

PALUDAMENTUM, in Roman antiquity, a habit that differed but little from the chlamys, except that this last belonged chiefly to the lower class of people. It was worn by the officers and principal men among the Romans in time of war,

who are therefore called *Paludati*; distinguished from the common soldiers, who, because they wore the sagum, were called *sagati*. The *paludamentum* came down only to the navel, was open on the sides, had short sleeves resembling angels' wings, and was generally white or red. It is also used to signify the common soldier's coat.

PALY, or **PALE**, in heraldry, is when the shield is divided into four or more equal parts, by perpendicular lines falling from the top to the bottom.

PALY BENDE is when the escutcheon is divided by perpendicular lines, which is *paly*; and also by diagonals, which is called *bendy*.

PAM, *n. s.* Probably, as Johnson says, from palm, victory, as trump from triumph. The knave of clubs.

Ev'n mighty *pam* that kings and queens o'erthrew,
And mowed down armies in the fights of lu. *Pope.*

PAMELIUS (James), a Flemish divine, the son of Adolphus, counsellor of state to Charles V., born at Bruges, in 1536. He was canon of Bruges; and Philip II. appointed him bishop of St. Omer; but, in going to take possession of his episcopate, he died at Mons. He wrote several works; of which the chief is his *Notes upon Tertullian and Cyprian*.

PAMIGER, or **PAMINGER** (Leonard), or the elder, was a scholar, musician, and the intimate friend of Martin Luther. He composed a great variety of church music, printed in four volumes, which appeared at different periods after his decease in 1568, under the superintendence of his son Sophonias.

The latter was born in 1526, studied under Luther and Melancthon, at Wittenberg, and afterwards suffered much persecution on account of his religious opinions. He became in 1568 rector of the choir at Oettingen; but, his principles forcing him to quit that place, he returned to Nuremberg, where he supported himself principally by the sale of his father's works, and by teaching at the Carthusian convent. His death took place in 1603.

PAMPAS DEL SACRAMENTO, vast plains of South America, to the eastward of the Andes, running in a direction nearly north and south through the province of Peru, to the extent of nearly 8000 square leagues. They are so level that they have been compared to the ocean, and are shaded with forests of eternal verdure. They are between the Ucayale and the limits of the Portuguese territories, which bound them to the east and west, while to the north they are bounded by the river Amazons. They contain abundance of lakes and rivers, whose isles and havens are inhabited by tribes greatly diversified. Rain and thunder are frequent, and for some hours of the day thick fogs always rest on the trees. The thickness of the woods often prevents the rain from penetrating to the earth, and the warmth and moisture give birth to innumerable insects and reptiles, and render these regions very unhealthy. Here some of the rarest vegetable products are found: balsams, oils, gums, resins, incense, cinnamon superior to that of Ceylon in strength, but not so valuable, on account of a juice which it transudes; cocoa, cascarilla, and

excellent spiceries. This vast region was discovered about the year 1726; and several missions were established, which were afterwards abandoned. In 1790 father Sobriela was instructed by the Spanish government to set out on an expedition, for the purpose of exploring the course of the Guallaga; and father Girval afterwards, in 1794, surveyed the Ucayale. The Spaniards have endeavoured to train the natives here to agriculture, and to the arts of civilised life; and various missionary settlements have so far succeeded that the missionaries have completely gained the good-will of the natives, and new communications are constantly opened with Peru.

PAMPELUNA, or **PAMPLONA**, a strong town in the north of Spain, the capital of the province of Navarre. It stands partly on an eminence on the banks of the Agra, partly on a plain, and is surrounded by mountains. It derives its chief defence from two castles, one in the inside, the other on the outside of the walls. The latter is the citadel and stands on a rock, of which the only accessible part is covered by a morass. It has a deep ditch, five bastions faced with stone, and in its centre an open space, of a circular form, communicating by five short streets, with five bastions. Pampeluna is said to have been the first town in Spain that embraced Christianity. Its bishopric is certainly one of the oldest; for it was abolished during the Moorish invasion. The public edifices are a cathedral, four churches, and thirteen monasteries. In this, as in most towns of Spain, the education of the youth of both sexes is very imperfect, being confided to the monks and nuns, and the society of the place is very monotonous. The manufactures are insignificant, but the surrounding country is fertile and well cultivated. Population 14,000.

This town is said to have been built by Pompey, after the defeat of Sertorius. In June 1813, on the flight of the French army from Vittoria, Pampeluna was hastily garrisoned and provisioned. It was forthwith invested by the British; but the approach of marshal Soult, with an army, towards the close of July, promised it an early deliverance. In the vicinity the obstinate conflicts of 27th and 29th July took place; and the French being compelled to repass the Pyrenees, with great loss, Pampeluna surrendered on the 31st of October. Sixty-two miles E. S. E. of Bilbao, and about 200 north-east of Madrid.

PAMPER, *v. a.* Ital. *pambere*; of Lat. *panes* and *bibere*. To fill, or rather to glut; feed luxuriously.

It was even as two physicians should take one sick body in hand, of which the former would minister all things meet to purge and keep under the body, the other to *pamper* and strengthen it suddenly again; whereof what is to be looked for but a most dangerous relapse?

Spenser.

You are more intemperate in your blood

Than Venus, or those *pampered* animals

That rage in savage sensuality. *Shakespeare.*

They are contented as well with mean food, as those that with the rarities of the earth do *pamper* their voracities. *Sandys.*

Praise swelled thee to a proportion ready to burst; it brought thee to feed upon the air, and to starve thy soul, only to *pamper* thy imagination. *South.*

His lordship lolls within at ease,
Pampering his paunch with foreign rarities.

Dryden.

To *pampered* insolence devoted fall,
Prime of the flock and choicest of the stall. *Pope.*

Hard is the fate of the infirm and poor;
Here, as I craved a morsel of their bread,
A *pampered* menial drove me from the door.

Moss.

PAMPHLET, *n. s.* & *v. a.* } Fr. *par un*
PAMPHLETEER. } *fillet* Whence

this word is written by Caxton, *paunflet*. A small book; properly a book sold unbound, or only stitched.

Can'st thou with deep premeditated lines,
With written *pamphlets* studiously devised.

Shakespeare.

I put pen to paper, and something I have done,
though in a poor *pamphletting* way. *Howell.*

I put forth a slight *pamphlet* about the elements
of architecture. *Wotton.*

Since I have been reading many English *pamphlets* and tractates of the Sabbath, I can hardly find any treatise wherein the use of the common service by the minister, and the due frequenting thereof by the people, is once named among the duties or offices of sanctifying the Lord's day. *White.*

He could not, without some tax upon himself and his ministers for the not executing the laws, look upon the bold licence of some in printing *pamphlets*.

Clarendon.

The squibs are those who in the common phrase are called libellers, lampooners, and *pamphleteers*.

Taylor.

As when some writer, in a public cause,

His pen, to save a sinking nation, draws;

While all is calm his arguments prevail,

Till power, discharging all her stormy bags,

Flutters the feeble *pamphlet* into rags. *Swift.*

With great injustice I have been pelted by *pamphleteers*. *Id.*

See Louvet, patriot, *pamphleteer*, and sage,

Tempering with amorous fire his virtuous rage.

Formed for all tasks, his various talents see,—

The luscious novel, the severe decree. *Canning.*

PAMPLONA, a city of Tunga, New Granada, situated on a plain, surrounded on all sides by mountains. It has a handsome parish church, with other public edifices and squares. 185 miles north-east of Santa Fe, and 156 W. S. W. of Truxillo.

PAMPHILUS, a celebrated painter of Macedonia, in the age of Philip II. He was founder of the school for painting at Sicyon; and he made a law which was observed not only in Sicyon, but all over Greece, that none but the children of noble and dignified persons should be permitted to learn painting. Apelles was one of his pupils.

PAMPHYLA, an ancient Grecian authoress, who flourished in Nero's reign, and wrote a general history, in thirty-three books, much commended by the ancients, but not extant.

PAMPHYLLIA, the ancient name of a country of Natolia, in Asia, now called Caramania and Cay Bay, between Lycia and Cilicia, on the south coast, north of the Mediterranean. Its first name was Mopsopia.

PAN, *n. s.* } Sax. *ponne*, *panna*; Belg.

PANCAKE. { *panne*; Swed. *panna*. A broad shallow vessel used in kitchens: hence, perhaps, the remarkable cavity of the knee; the part of a

gunlock which contains the priming, &c. : a pancake is an excellent preface or addition to dinners, cooked in the frying-pan.

This were but to leap out of the *pan* into the fire.

Spenser.

A certain knight swore by his honour they were good *pancakes*, and swore by his honour the mustard was naught.

Shakespeare.

Our attempts to fire the gunpowder in the *pan* of the pistol succeeded not.

Boyle.

The pliant brass is laid

On anvils, and of heads and limbs are made,

Pans, cans.

Dryden.

The flour makes a very good *pancake*, mixed with a little wheat flour.

Mortimer's Husbandry.

PAN, in mythology, the god of shepherds, hunters, and all country exercises. In Egypt he was named Mendes, which, according to Jablonski, signifies fecundity. Hence his symbol was a he-goat, the most salacious of all animals. His principal temple was a magnificent building in a city of Lower Egypt, called after his name, where was kept a he-goat, to whom sacrifices of a very monstrous kind were offered. Homer makes him the son of Mercury, and says he was called Pan from *παν*, omne, all, because he charmed all the gods with his flute; others say that he was the son of Demogorgon, and first invented the organ, of seven unequal reeds, joined together in a particular manner. Having on a time fought with Cupid, that god in spite made him fall in love with the coy nymph Syrinx, who, flying from him to the banks of Faddon, a river of Arcadia, at the instant prayers of the nymphs, was turned into a reed, as her name in Greek signifies, which the god grasping, instead of her, made a pipe of it, and, for his music, was adored by the Arcadians. The most common opinion was, that he was the son of Mercury and Penelope. He was by no means displeasing to the nymphs, who are generally drawn dancing round about him to hear his pipe. The goddess Luna, and the nymphs, cut the most distinguished figure in the history of his amours. The usual offerings made him, were milk and honey, in shepherds' wooden bowls; also they sacrificed to him a dog, the wolf's enemy; whence his usual epithet is *λυκαυος*; and whence also his priests were called Luperi. His festival brought into Italy by Evander the Arcadian, and revived afterwards by Romulus, in memory of his pre-server, was celebrated by the Romans on the 15th February. He was also called by them Inuus, ab innuendo. See Liv. l. 5, Macrob. Sat. I. 22, and Serv. in Virg. *Æn.* VI. 775. The ancients, by giving so many adjuncts and attributes to this idol, seem to have designed him for the symbol of the universe: his upper parts being human, because the upper part of the world is fair, beautiful, smiling like his face; his horns symbolise the rays of the sun and of the moon; his red face the splendor of the sky; the spotted skin wherewith he is clothed, the stars which bespangle the firmament; the roughness of his lower parts, beasts and vegetables; his goat's feet the solidity of the earth; his pipe, compact of seven reeds, the seven planets, which they say make the harmony of the spheres: his crook, bending round at the top, the years circling in one another.—Serv. Interpr. Such is the Pan

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of the poets; but among the Egyptians, as Mendes, and by the earlier Greeks, he was worshipped in a much higher character, as the soul of the universe, the whole system of things, animated and eternal.

PANACEA, *n. s.* Fr. *panacée*; Gr. *πανακεια*. A universal medicine. An herb.—Ainsworth.

PANA'DA, *n. s.* } From Lat. *panis*, bread.

PANA'DO. } Food made by boiling bread in water.

Their diet ought to be very sparing; gruels, *panados*, and chicken broth.

Wiseman's Surgery.

PANÆTIUS, a stoic philosopher of Rhodes, who flourished about A. A. C. 140. He studied at Athens, and was offered citizenship, but declined. He came to Rome, where he had the Scipios and the Læliuses among his disciples. Scipio Africanus, the younger, was so attached to him, that he took him along with him in all his expeditions. His countrymen, the Rhodians, were highly indebted to him for various privileges and immunities. He wrote a treatise on the Duties of Man, which Cicero praises greatly in his work on the same subject. He lived about thirty years after this.

PANAGIOTI, a Greek nobleman of the seventeenth century, who was chief interpreter to the Grand Signior; and had so great interest with him that he procured many favors to his countrymen. He wrote a book in modern Greek, entitled The Orthodox Confession of the Catholic and Apostolic Eastern Churches. He died in 1673.

PANAMA, a province of Colombia, in the late viceroyalty of New Granada, bounded on the north by the Spanish Main, on the east by the province of Darien, on the south by the Pacific Ocean, and on the west by Veragua. The name of Panama is said to have been given to this country by Tello de Guzman, in 1513, from his having observed the natives engaged in fishing; the word denoting a place abounding in fish. It is bounded on the north by the Caribbean Sea or Spanish Main, on the west by the province of Veragua, on the east by Darien, and on the south by the Pacific Ocean. Great part of the country is still covered with thick forests; and the land between the two seas consists generally of abrupt and broken chains of mountains, one of which, the Sierra de Canatague, on the borders of Panama and Veragua, divides North from South America. On the tops of these craggy mountains the land is sterile and uninhabited, the cities, settlements, plantations, and Indian villages, being mostly along the shores of the two oceans.

The river Chagre is the principal stream in this province, and may be called the high-road of Panama, being used as the means of communication between the eastern shore and the capital. It takes its rise in the mountains near Cruces, which place is about five leagues from Panama. The Chagre has a considerable descent, but is nevertheless navigable for boats up to Cruces; its velocity is about three miles an hour; therefore the ascent from the coast is rather fatiguing. The breadth of this river is about a quarter of a mile at the mouth, and 150 feet at Cruces. The distance from the estuary

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to Cruces, the last navigable point in a straight line, is not above thirty-six miles; but the river winding frequently increases this length. It requires four or five days to ascend it when the waters are not very high. If the water passage is counted, the sinuosities make it forty-three miles, reckoning from Fort San Lorenzo, which defends the entrance. It is by means of this river that one of the communications between the two oceans has been proposed. The ascent from Cruces, where the river is first navigable, towards the summit of the mountains, is rapid for a short space, after which there is a gentle descent the whole way to the South Sea.

In the river Chagre are seen numberless caymans or alligators; they are observed either in the water or on the banks; but, on account of the thorny shrubs and thick underwood, cannot be pursued on shore.

The climate of Panama is hot, as may be well supposed from its situation. The greatest heat is felt in the months of August, September, and October, when it is almost insupportable: the brisas, or trade-winds, and the continual rains, ameliorate the excessive heats during the other months; but at the same time render the climate very unpleasant. The mines produce so little gold or silver, that they are supposed not to answer the expense of working.

The pearl fishery here is also at present of little importance. It was anciently carried on amongst the small islands in the bay of Panama, and was very lucrative. An endeavour has lately been made to re-establish it.

The soil of Panama is prolific, abundantly producing the tropical fruits and plants. On the borders of the Chagre the luxuriance is such, that it is very difficult to penetrate the forests. The barks which navigate the stream are formed of those trees which grow nearest the waters, some of which are very large. These forests are plentifully stocked with all sorts of wild animals peculiar to the torrid regions, among which are innumerable tribes of monkeys. The peacock, the turtle-dove, the heron, and various other sorts of beautiful birds, frequent the forests of the Chagre and of Panama. The country is also infested with reptiles, insects, &c.

The trade of Panama consists in its relations with Veragua, and the ports of Peru and New Granada. From these it is supplied with cattle, maize, wheat, and poultry. Its exports are of no great importance or value. From Cartagena, European goods are received, for which mahogany, cedar, and other woods, with gums and balsams, are exchanged.—Part of the European trade of the western shore of South America is carried on by way of Panama and Porto Bello; but, since the galleons were disallowed, the trade of these two cities has been comparatively trifling. The province contains three cities, twelve villages, and numerous settlements of converted Indians.

PANAMA, the capital of the above province, a city and sea-port, built near the bottom of a large bay of the Pacific which bears the same name. From this city the Isthmus of Darien has frequently taken its appellation; at present it is indifferently styled the Isthmus of Panama or of Darien. It stands in 9° 0' 30" N. lat., and

79° 19' W. long. The streets are broad and paved, both in the city and suburbs; but the houses of the latter are mostly of wood, intermixed with thatched huts. The cathedral is a handsome edifice of stone, as are the churches, convents, monasteries, and an excellent hospital. The people of Panama have a disagreeable drawling method of speaking, and appear as if they were overcome by the great heat of the climate: they nevertheless are really healthy, and live in general to a good age.

Such is the spirit of trade in this place that every person is engaged in bartering. A treasury, custom-house, &c., are established here, and, when the galleons came from Lima, Panama and Porto Bello might be said to be the Acapulco and Vera Cruz of South America. The former is remarkable for its fine bay studded with islands, and in the road before those of Perico, Naos, and Flamingos, ships from the south anchor in safety two leagues and a half from the town.

PANAPA ISLAND, an island at the mouth of the Orinoco, separated from the shore by a shallow channel, moderately wide. At the east and west points there are flats with very little water on them. That of the west point ascends more than a league, and inclines always to the south. Between this island, which is a league and a half long, and the north coast, is the principal channel of the Orinoco.

PANAROOCAN, a town of Java, formerly the capital of a principality, situated on a river which enters the sea by several mouths, about twenty miles west of Cape Sandana, the north-east entrance of the island. It is now subject to the Dutch, and has a square fort, which stands about three quarters of a mile from the sea.

PANATHENÆA, *παναθηναία*, in Grecian antiquity, an ancient Athenian festival, in honor of Athena, or Minerva, the protectress of Athens. Harpocration and Suidas refer the institution of this festival to Erichthonius, the fourth king of Athens, who lived before Theseus. Theodoret alone says the feast was established by Orpheus. Be this as it will, till Theseus, it was never a particular feast of the city of Athens, and was called simply Athenæa; but, that prince uniting all the people of Attica into one republic, they afterwards assisted at the feast; whence the name Panathenæa, i. e. the feast of all Attica. In effect all Attica was present; and each people sent a bullock for the sacrifices, and for the entertainment of the vast multitudes of people assembled. There were two festivals under this denomination, the greater and the less. The greater panathenæa were exhibited every five years; the less every three, or, according to some writers, annually. Though the celebration of neither, at first, employed more than one day, yet, in after times, they were protracted for many days, and solemnised with greater preparations and magnificence than at their first institution. The ceremonies were the same in the great and the little panathenæa; excepting a banner whereon the actions of the goddess were represented in embroidery, performed by maids, with the names of those who had distinguished themselves in the service of the republic which

was only borne at the greater. Prizes were established for three different kinds of combat; the first consisted of foot and horse races; the second of athletic exercises; and the third of poetical and musical contests. These last are said to have been instituted by Pericles. Singers of the first class, accompanied by performers on the flute and cithara, exercised their talents here, upon subjects prescribed by the directors of these exhibitions. A particular account of the order observed in this festival, with the various contests, races, prizes, &c., may be found in Barthelemi's Travels of Anacharsis, vol. ii. p. 434.

PANAX, ginseng, a genus of the diœcia order, belonging to the polygamia class of plants. There are five species.

1. *P. arborea*.
2. *P. fruticosum*. Of these two species and the *spinosa*, there is nothing that merits particular notice.
3. *P. quinquefolium*, the five-leaved ginseng, is a native of North America, and is generally believed to be the same with the Tartarian ginseng; the figures and descriptions of that plant which have been sent to Europe by the missionaries agreeing perfectly with the American plant. This has a jointed, fleshy, and taper root, as large as a man's finger, frequently divided into two smaller fibres downwards. The stalk rises nearly a foot and a half high, and is naked at the top, where it generally divides into three smaller foot-stalks, each sustaining a leaf composed of five spear-shaped lobes, sawed on their edges; they are of a pale green, and a little hairy. The flowers grow on a slender foot-stalk just at the division of the foot-stalks which sustain the leaves, and are formed into a small umbel at the top; they are of an herbaceous yellow color, composed of small yellow petals, which are recurved. Woodville says they are white, that they are produced in a roundish terminal umbel, and are hermaphrodite and male on separate plants. The former stand in close simple umbels; the involucre consists of several small, tapering, pointed, permanent leaves; the proper calyx is tubular, and divided at the rim into five small teeth; the corolla consists of five petals, which are small, oval, equal, and reflexed; the filaments are five, short, and furnished with simple antheræ; the germen is roundish, placed below the corolla, and supports two short erect styles, crowned by simple stigmata; the fruit is an umbilicated two-celled berry, each containing a single irregularly heart-shaped seed. The flowers appear in the beginning of June; and are succeeded by compressed, heart-shaped berries, which are first green, but afterwards turn red; enclosing two hard, compressed, heart-shaped seeds, which ripen in the beginning of August. Ginseng was formerly supposed to grow only in Chinese Tartary, affecting mountainous situations, shaded by close woods; but it has now been long known that this plant is also a native of North America, whence M. Sarrasin transmitted specimens of it to Paris in the year 1704; and the ginseng since discovered in Canada, Pennsylvania, and Virginia, by Lasiteau, Kalm, Bartram, and others, has been found to correspond exactly with the

Tartarian species; and its roots are now regularly purchased by the Chinese, who consider them to be the same as those of eastern growth, which are known to undergo a certain preparation, whereby they assume an appearance somewhat different. For it is said that in China the roots are washed and soaked in a decoction of rice or millet-seed, and afterwards exposed to the steam of the liquor, by which they acquire a greater firmness and clearness than in their natural state. The plant was first introduced into England in 1740, by that industrious naturalist, Peter Collinson. They thrive in those places where it has a light soil and shady situation, and will produce flowers and seeds; but the latter, though in appearance ripe and perfect, will not produce any new plants, as Mr. Miller says he has repeatedly made the experiment, and waited for them three years without disturbing the ground. There are many good specimens in the royal botanic garden at Kew. The dried root of ginseng, as imported here, is scarcely the thickness of the little finger, about three or four inches long, frequently forked, transversely wrinkled, of a horny texture, and both internally and externally of a yellowish white color. On the top are commonly one or more little knots, which are the remains of the stalks of the preceding years, and from the number of which the age of the root is judged of. 'To the taste it discovers a mucilaginous sweetness, approaching to that of liquorice, accompanied with some degree of bitterness, and a slight aromatic warmth, with little or no smell. It is far sweeter and of a more grateful smell than the roots of fennel, to which it has by some been supposed similar; and differs likewise remarkably from those roots in the nature and pharmaceutical properties of its active principles, the sweet matter of the ginseng being preserved entire in the watery as well as the spirituous extract, whereas that of fennel roots is destroyed or dissipated in the inspissation of a watery tincture. The slight aromatic impregnation of the ginseng is likewise in good measure retained in the watery extract, and perfectly in the spirituous.' Lewis, Mat. Med. p. 325. The Chinese ascribe extraordinary virtues to the root of ginseng; and have long considered it as a sovereign remedy in almost all diseases to which they are liable, having no confidence in any medicine unless in combination with it. Jartoux, when in China, boasted of its effects upon himself. But we know of no proofs of the efficacy of ginseng in Europe; and from its sensible qualities we judge it to possess very little power as a medicine. A drachm of the ginseng root may be sliced and boiled in a quarter of a pint of water to about two ounces; then, a little sugar being added, it may be drank as soon as it is cool enough. The dose must be repeated morning and evening; but the second dose may be prepared from the same portion of root which was used at first; for it may always be twice boiled.

4. *P. spinosa*. See No. 1.

5. *P. trifolium*, the three-leaved ginseng, grows naturally in North America; but Mr. Miller never saw more than one plant, which

was sent to him from Maryland, and did not live beyond the first year; being planted in a dry soil, in a very dry season. The stalk was single, and did not rise more than five inches in height, dividing into three foot-stalks, each sustaining a trifoliate leaf, whose lobes were longer, narrower, and deeper indented on their edges than the former. The flower-stalk rose from the divisions of the foot-stalk of the leaves; but, before the flowers opened, the plant decayed.

PANCHBERARAH, a town and small district of Hindostan, in the province of Cashmere. It was formerly esteemed one of the holy places of the Hindoos; but, since the province came into possession of the Mahometans, it has been neglected. Long. 75° E., lat. 34° 32' N.

PANCARPUS, Gr. from *παν*, all, and *καρπος*, fruit, in Roman antiquity, a kind of show, which the Roman emperors frequently exhibited to the people. The name was also given by the Athenians to a sacrifice wherein all kinds of fruits were offered. In this spectacle, the circus, being all set over with large trees, represented a forest, into which the beasts being let from the dens under ground, the people, at a sign given by the emperor, pursued, shot, and killed all they could lay hold of, which they afterwards carried away, to regale upon at home. The beasts usually given on these occasions were boars, deers, oxen, and sheep. Casaubon, Cujas, Pithou, &c., make the pancarpus and sylvia the same thing; Salmasius will have them different. The sylvia, according to him, was such a diversion as that above described; but the pancarpus, a combat, wherein robust people, hired for that purpose, fought with wild beasts; which opinion he confirms from Cassian, Justinian, Claudian, Firmicius, Manilius, and Cassiodorus.

PANCHES, a province of New Granada, fifteen leagues in length from east to west, and twelve wide from north to south, of a hot temperature, and rough and craggy territory, full of mountains and ravines. It is well watered by several large rivers, and is fertile in maize and vines. Here are also many sugar engines for the manufactory of sugar. The capital is Tocaima.

PANCIROLLUS (Guy), a famous lawyer of Rhegium, was educated at the principal universities of Italy; and became professor of law at Padua. Philibert Emmanuel, duke of Savoy, invited him to his university in 1571, where he composed his ingenious treatise *De rebus inventis et deperditis*. But, the air of Turin not agreeing with him, he there lost an eye, and, for fear of losing the other, returned to Padua, where he died in 1591.

PANCO, POINT, a remarkable cape of the north-eastern extremity of the island of Java, at the mouth of the western entrance of the straits of Madura. Here Java and European pilots are stationed, who, as soon as vessels are discovered standing for the channel, pilot them to Gressee and Sourabaya. Long. 112° 44' E., lat. 6° 48' S.

PANCRAST WICK, a hamlet of England, in Devonshire, four miles W. N. W. from Holsworthy. Population 403.

PANCRATIUM, from *παν*, all, and *παρρω*, I overcome, among the ancients, a kind of intermixed exercise, consisting of the lucta or wrestling, and the pugilate or boxing; but it differs in this, that, as the athletes were not to seize the body, their hands were not armed with gauntlets, and gave less dangerous blows. It was the third gymnastic exercise, and not introduced till long after the others. Those who engaged in these exercises were called *pancratiastæ*, as well as those who did not confine themselves to one exercise, but succeeded in several different ones.

PANCRACTICAL, *adj.* Gr. *παν* all, and *παρρω*, strength. Excelling in all the gymnastic exercises.

He was the most *pancratical* man of Greece, and, as Galen reporteth, able to persist erect upon an oily plank, and not be removed by the force of three men.

PANCREAS, *n. s.* } Gr. *πανκρεας*. The **PANCREATIC**, *adj.* } sweet-bread, a gland of the conglomerate sort, situated between the bottom of the stomach and the vertebrae of the loins: pancreatic is, contained in the pancreas.

In man and viviparous quadrupeds, the food moistened with the saliva is first chewed, then swallowed into the stomach, and so evacuated into the intestines, where, being mixed with the choler and *pancreatic* juice, it is further subtilised, and easily finds its way in at the straight orifices of the lacteous veins.

Ray on the Creation.
The bile is so acrid, that nature has furnished the *pancreatic* juice to temper its bitterness. *Arbutnot.*

PANCREAS. See **ANATOMY**, Index.

PANCSOVA, a town of Hungary, pleasantly situated at the confluence of the Temes and the Danube. It has a good trade with Turkey; and having been burned down so lately as 1789, to prevent its falling into the hands of the Turks, has recovered very rapidly. Inhabitants 7000. They are a mixed race of Walachians, Rascians, Germans, and Greeks. Eight miles north-east of Belgrade.

PAN'CY, or } Fr. *pensée*; Lat. *panax*. A **PAN'SY**, *n. s.* } kind of violet.

The daughters of the flood have searched the mead
For violets pale, and cropped the poppy's head;
Pancies to please the sight, and cassia sweet to smell.

Dryden.

The real essence of gold is as impossible for us to know, as for a blind man to tell in what flower the color of a *pansy* is, or is not to be found, whilst he has no idea of the color of a *pansy*. *Locke.*

From the brute beasts humanity I learned,
And in the *pansy's* life God's providence discerned.

Harte.

PANSY. See **VIOLA**.

PANDA, in mythology, a goddess who was invoked as the protectress of travellers and navigators. The goddess of peace was also called Panda, because she opened the gates which were shut in time of war. According to Varro, Panda is also a surname of Ceres, derived a pane dando, because she gave bread to mankind.

PANDANUS, in botany, a genus of the monandria order, belonging to the diœcia class of plants.

PANDARUS, in fabulous history, a son of Lycaon, who assisted the Trojans in their war with the Greeks. He wounded Menelaus and

Diomedes, but was at last killed by the latter. Hom. II. ii. and v. Virg. *Æn.* v. 495.

PANDECT, *n. s.* Lat. *pandecta*. A treatise that comprehends the whole of a science: particularly a digest of the whole civil law.

It were to be wished that the commons would form a *pandect* of their power and privileges to be confirmed by the entire legislative authority. *Swift*.

PANDECTÆ, **PANDECTS**, from *παν*, all, and *δεχομαι*, to take, *q. d.* a book containing all things or all laws, the digest or collection, made by Justinian's order, of 534 decisions or judgments of the ancient lawyers, on so many questions occurring in the civil law; to which that emperor gave the force of law, by the epistle prefixed to them. They consist of fifty books, and make the first part of the body of the civil law. They were denoted by *ππ*; but the copyists taking those *ππ* for *ff*, the custom arose of quoting them by *ff*. In 1137 the pandects of Justinian, which had been brought by an Amalfitan merchant from the east, fell into the hands of the Pisans, and for nearly three centuries they were called Pandectæ Pisanae. But about 1416, Pisa being taken by the Florentines, they were transported to Florence, where they are now preserved in the library of the Medici, and named Pandectæ Florentinae. Papias extends the name of Pandects to the Old and New Testament. There are also Pandectæ Medicinæ by Mat. Sylvaticus of Mantua; Pandects of Turkey, by Leunclavius; and Pandectæ Canonum, by bishop Beveridge.

PANDEMIC, *adj.* Gr. *παν* and *δημος*, a people. Incident to a whole people.

Those instances bring a consumption, under the notion of a *pandemic*, or endemick, or rather vernacular disease to England. *Harvey*.

PANDER, *n. s. & v. a.* } From Pandarus,
PANDERLY, *adj.* } the pimp in the story of Troilus and Cressida; it was therefore originally written pandar, till its etymology was forgotten.—Johnson. A pimp; a male bawd; a procurer; an agent for the ill designs of another: to pander, to be basely subservient to another's vices: panderly follows these senses.

If ever you prove false to one another, since I have taken such pains to bring you together, let all pitiful goers between be called *panders* after my name. *Shakespeare. Troilus and Cressida*.

Proclaim no shame,

When the compulsive ardour gives the charge,
Since first itself as actively doth burn,
And reason *panders* will. *Id. Hamlet*.

Oh you *panderly* rascals! there's a conspiracy against me. *Shakespeare*.

Thou hast confessed thyself the conscious *pander* of that pretended passion:

A single witness infamously known,
Against two persons of unquestioned fame. *Dryden*.

My obedient honesty was made
The *pander* to thy lust and black ambition. *Rowe*.

PANDIA, an ancient festival held at Athens, instituted by Pandion, from whom some derive its name; though others insist that, as it was observed in honor of Jupiter, the name is derived from his omnipotence, because he *παντα διεινεν*, can move and turn all things as he pleases.

PANDICULATION, *n. s.* Lat. *pandiculans*. The restlessness and uneasiness that accompany the cold fits of an intermitting fever.

Windy spirits, for want of a due volatilization, produce in the nerves a *pandiculation*, or oscitation, or stupor, or cramp in the muscles. *Floyer*.

PANDORA, in mythology, a woman formed by Prometheus, to whom each of the gods gave some perfection. Venus bestowed upon her beauty; Pallas wisdom; Juno riches; Apollo music; and Mercury eloquence; but Jupiter, being displeased at Prometheus for having stolen fire from heaven to animate the mass he had formed, gave Pandora a box, which she was ordered not to open; and then sent her to the earth with this box, in which were enclosed age, diseases, pestilence, war, famine, envy, discord, and all the evils and vices that could afflict mankind. This fatal box was opened by Epimetheus, Prometheus's brother, when instantly all the diseases and mischiefs with which it was filled spread over the earth, and Hope alone remained at the bottom. Hesiod says that she was the first woman.

PANDORON. See **PANDURA**.

PANDOSIA, a strong inland town of the Brutii, on the Acheron, where Alexander of Epirus, deceived by the oracle of Dodona, met his fate and perished. (Livy, Justin, Strabo.) Now called Mendicino.—*Holstein*.

PANDOSIA, a town of Epirus, on the Acheron, which Alexander of Epirus was advised to avoid as fatal, but which he met with in Italy. (Livy.) This last is said to have been the residence of the Enotrian kings.—*Strabo*.

PANDOURS are Hungarian infantry; they wear a loose garment fixed tight to their bodies by a girdle, with great sleeves, and large breeches hanging down to their ancles. They use fire-arms, and are excellent marksmen; they have also a kind of sabre nearly four feet long, which they use with great dexterity.

PANDURA, or **PANDORON**, a musical instrument, used among the ancients, resembling the lute; so called from *παν* and *δωρον*, i. e. all gifts. Isidore derives the name from its inventor Pandorus; others from Pan, to whom they attribute its invention, as well as that of the flute. It has the same number of strings with the lute; but they are of brass, and of consequence give a more agreeable sound than those of the lute. Its frets are of copper, like those of the cistre; its back is flat like those of the guitar; and the rims of its table, as well as its ribs, are cut in semicircles. Du Cange observes, that Varro, Isidore, and others of the ancients, mention it as having only three strings; whence it is sometimes also spoken of under the denomination *τρίχορδον*, trichordum.

PANE, *n. s.* Fr. *paneau*; Ital. and Lat. *pagina*. A square of glass: hence a variegated piece of work in one frame.

Him all repute

For his device in handsomg a suit,
To judge of lace, pink, *panes*, print, and plait,
Of all the court to have the best conceit. *Donna*.

The letters appeared reverse through the *pane*.
But in Stella's bright eyes they were placed right again. *Swift*.

The face of Eleanor owes more to that single *pane* than to all the glasses she ever consulted.

Pope's Letters.

PANEGRYIC, *n. s.* } Fr. *panegyrique*; Gr. PANEGYRIST, *n. s.* } πανηγυριστής. An eulogy; encomiastic piece; praise.

Add these few lines out of a far more ancient *panegyrist* in the time of Constantine the Great.

Camden.

The Athenians met at the sepulchres of those slain at Marathon, and there made *panegyrics* upon them.

Stillington.

That which is a satyr to other men must be a *panegyric* to your lordship.

Dryden.

To chase our spleen, when themes like these increase,

Shall *panegyric* reign and censure cease?

This gentleman's name requires no *panegyric*.

Byron.

PANEGRYIC is derived from παν all, and αἵνω, to assemble; because anciently held in public assemblies of the Greeks, at their games, feasts, fairs, or religious meetings. To make their *panegyrics* the more solemn, the Greeks used to begin with the praises of the deity in whose honor the games, &c., were celebrated; then they descended to the praise of the people or country where they were celebrated; then to the princes or magistrates who presided at them; and at length to the champions, especially the conquerors who had gained the prizes in them.

PANEGRYICUM, in church history, an ecclesiastical book, used by the Greek church, containing the *panegyric*al orations of various authors, on the solemnities of Jesus Christ and the saints. It is found in MS. in most churches, but is not the same in all; each church having its particular saints, and the compilers of this kind of books usually suited their collections to the taste of their own devotion. They are disposed according to the order of months, and frequently consist of twelve volumes, answering to the twelve months. Among the principal authors of these works are Athanasius, Cyril, Basil, Chrysostom, &c.

PANEKA, or PAFCA POINT, a remarkable point of the Island of Java, situated at the north-eastern extremity, at the mouth of the western entrance of the straits of Madura. Here the Dutch maintain a small military guard; and Java and European pilots are stationed, who, as soon as vessels are discovered standing for the channel, go before to pilot them to Gresse and Sourabhaya. Refreshments of every kind may be procured from the masters and crews of the pilot boats at moderate prices.

PANEL, *n. s.* From PANE. A square of wood, paper, or parchment: hence a schedule or roll, containing the names of such jurors as the sheriff provides to pass upon a trial.

This fellow will join you together as they join wainscot; then one of you will prove a shrunk *panel*, and, like green timber, warp.

Shakespeare.

The chariot was all of cedar, save that the fore end had *panels* of sapphires, set in borders of gold.

Bacon.

Then twelve of such as are indifferent, and are returned upon the principal *panel*, or the tales, are sworn to try the same, according to evidence.

Hale's History of England.

Maximilian, his whole history is digested into twenty-four square *panels* of sculpture in bas relief.

Addison on Italy.

A bungler thus, who scarce the nail can hit, With driving wrong will make the *panel* split.

Swift.

PANG, *n. s. & v. a.* Sax. pang, venom? Extreme pain; or throe of pain; torment: to torment extremely or cruelly.

I grieve myself

To think, when thou shalt be disedged by her,

Whom now thou tirest on, how thy memory

Will then be *panged* by me.

Shakespeare.

Say, that some lady

Hath for your love as great a *pang* of heart,

As you have for Olivia.

Id. Twelfth Night.

Sufferance made

Almost each *pang* a death.

Id. Henry VIII.

Earth trembled from her entrails, as again

In *pangs*; and nature gave a second groan.

Milton.

Juno, pitying her disastrous fate,

Sends Iris down, her *pangs* to mitigate.

Denham.

My son advance

Still in new impudence, new ignorance,

Success let others teach, learn thou from me,

Pangs without birth, and fruitless industry.

Dryden.

I saw the hoary traitor

Grin in the *pangs* of death, and bite the ground.

Addison.

Ah! come not, write not, think not once of me, Nor share one *pang* of all I felt for thee.

Pope

Heaven and earth are pulling different ways: and, which ever succeeds in drawing him, there will be a parting *pang*, when the ties give way that bind him to the other. If the will of God be, that he should suffer either way, it is better that he should suffer the *pang* of breaking with the world, than the *pang* of breaking with his God, and making shipwreck of eternity. He would fain keep on terms with both. But that cannot be. He cannot serve God and mammon.

British Review.

PANGATARRAN, a long flat island of the Sooloo archipelago, about ten miles long by four in average breadth. It consists of a bed of coral rock, and a very thin soil. The island, however, abounds in cocoa nut trees. There is no fresh water, nor is there any good anchoring ground near, except in a few places. The island has abundance of cattle, goats, and poultry, and is tolerably well inhabited. It was formerly settled by the Spaniards. Some of the chief houses are built on trees, lopped off for posts, which have vegetated afterwards. Long. 120° 30' E, lat. 6° 9' N.

PANGESANA, PANGESANI, or PANGANSANE, an island to the south of Celebes, in the Eastern Seas, and separated from Bouton on the east by a strait which is not more than a cable's length across. It is about fifty-two miles in length, and sixteen in average breadth. The northern part is low, marshy, and unhealthy, but it is in general well peopled. Long. 122° 50' E, lat. 5° 5' S.

PANGOLIN, a species of the manis peculiar to Hindostan. It is certainly a remarkable variety, if not a different species, of the pangolin of Buffon. According to a paper in the Asiatic Researches, 'it has hardly any neck; and, though some filaments are discernible between the scales, they can scarcely be called bristles. But the principal difference is in the tail; that of Buffon's

animal being long, and tapering almost to a point; while that of ours is much shorter, ends obtusely, and resembles in form and flexibility the tail of a lobster. In other respects it seems to have all the characters of Buffon's pangolin; a name derived from that by which the animal is distinguished in Java, and consequently preferable to manis or philidotus, or any other appellation deduced from any European language. A female pangolin, described in the Asiatic Researches, 'had a long tongue shaped like that of the camelion; and if it was nearly adult, as we may reasonably conclude from a young one found in it, the dimensions of it were much less than those which Buffon assigns generally to his pangolin; for he describes its length as six, seven, or eight feet, including the tail, which is almost, he says, as long as the body when it has attained its full growth; whereas ours is but thirty-four inches long from the extremity of the tail to the point of the snout, and the length of the tail is fourteen inches; but, exclusively of the head, which is five inches long, the tail and body are indeed nearly of the same length; and the small difference between them may show, if Buffon be correct in this point, that the animal was young. The circumference of its body in the thickest part is twenty inches, and that of the tail only twelve. There are on each foot five claws, of which the outer and inner are small when compared with the other three. There are no distinct toes; but each nail is moveable by a joint at its root. This creature is extremely inoffensive. It has no teeth, and its feet are unable to grasp. The nails are well adapted for digging in the ground; and the animal is so dextrous in eluding its enemies by concealing itself in holes and among rocks, that it is extremely difficult to procure one. The upper jaw is covered with a cross cartilaginous ridge, which, though apparently not at all suited to any purposes of mastication, may, by increasing the surface of the palate, extend the sense of taste. The oesophagus will admit a man's fore finger with ease. The tongue at the bottom of the mouth is nearly about the size of the little finger, whence it tapers to a point. The animal can protrude this member a great way from the mouth. The tongue arises from the ensiform cartilage and the contiguous muscles of the belly, and passes in form of a round distinct muscle over the stomach, through the thorax, immediately under the sternum, and interior to the windpipe. When dissected out, the tongue could be easily elongated so as to reach more than the length of the animal exclusive of its tail. There is a cluster of salivary glands seated around the tongue, as it enters the mouth. These will necessarily be compressed by the action of the tongue; so as occasionally to supply a plentiful flow of their secretion. The stomach is cartilaginous, and analogous to that of the gallinaceous tribe of birds. When dissected it is generally found full of small stones and gravel, which in India are almost universally calcareous. The inner surface of the stomach is rough to the feel, and formed into folds, the interstices of which are filled with a frothy secretion. The guts are filled with a sandy pulp, in which, however, are

interspersed a few distinct small stones. No vestiges of any animal or vegetable food have been traced in the whole *primæ viæ*. The gall-bladder is commonly distended with a fluid resembling in color and consistence the dregs of beer. It is a viviparous animal. From the contents of its stomach and *primæ viæ*, the pangolin has been supposed by Mr. Burt, an eminent surgeon in Bengal, to derive its nourishment from mineral substances. This novel conjecture is not a little confirmed by the experiments of M. Bruquatelli of Pavia, on the authority of M. Creil, by which we learn that some birds have so great a dissolvent power in the gastric juice as to dissolve in their stomachs flints, rock crystal, calcareous stones, and shells. See MANIS.

PANGONIA, in the old system of mineralogy, from *πας*, numerous, and *γωνος*, an angle, a genus of crystals, consisting of such as are composed of many angles. The bodies of this genus are single-pointed, or imperfect crystals, composed of dodecangular or twelve-planed columns, terminated by twelve-planed pyramids, and the whole body therefore made up of twenty-four planes. There are three species.

PANIANY, a sea-port town of Malabar, forty miles south by east from Calicut. Lat. 10° 44' N., long. 76° E. It is called by the natives Punang Wacul, and contains above 500 houses, belonging to traders, forty mosques, and at least 1000 huts. The town is scattered over a sandy plain, on the south side of a river, which descends from Animalaya, and enters the sea by a very wide channel: the mouth, however, is shut by a bar, which only admits boats to enter. It is very irregularly built, but many of the houses are of stone, two stories high, and thatched with cocoa nut leaves. The huts are inhabited by boatmen and fishermen, who were formerly Mucuas, a low caste of Hindoos, but have now all embraced the faith of Mahomet. The trading boats here are called pattamars, and on an average carry 50,000 cocoa nuts, or 1000 muddies of rice, equal to 500 Bengal bags. About sixty years ago the Moplays of this port were very rich, and possessed vessels that sailed to Surat, Mocha, Madras, and Bengal; but the oppressions of Tippoo Sultan reduced them to poverty. The exports hence are teak wood, cocoa nuts, iron, and rice; the chief imports wheat, pulses, sugar, jagory, salt, cut (terra japonica), and spices.

This is the residence of the tangul, or chief priest, of the Moplays, who says he is descended from Ali and Fatima, the daughter of Mahomet. Although of the Mahometan religion, the tangul's sister's son, according to the custom of Malabar, is considered as the heir to this hereditary dignity. These people are called Moplayar in Malabar, and Lubbaymar at Madras; but, among themselves, they acknowledge no other name than that of Mussulmans.

Of Arabic extraction, they consider themselves, according to Mr. Hamilton, of more honorable birth than the Tartar Mahometans. They use a written character peculiar to themselves, and totally different from the present Arabic, which is known to very few of them except their priests. The Moplays of Malabar are both traders and

farmers; the Lubbymers of Madras confine themselves to the former profession. As traders, they are a remarkably quiet, industrious people; but some of them in the interior, having been encouraged by Tippoo in a most licentious attack on the lives, persons, and property of the Hindoos, became a set of fierce, blood-thirsty, bigoted ruffians; which disposition the British government had considerable difficulty in reforming. In religious matters the tangul is the head of the sect, and the office is hereditary in the female branch. The mosques are very numerous, in each of which presides an imaum, or moullah, appointed by the tangul, who usually bestows the office on his sister's son, the heir of the person who last held the office. (F. Buchanan, &c.)

PANIC, *n. s. & adj.* Fr. *panique*; Gr. *πᾶν-σοφ*. From the god *Pav*, groundless fear being supposed to be sent by him. A sudden and extreme fright: violent (as applied to fear), beyond the cause.

The sudden stir and *panical* fear, when chanticleer was carried away by reynard. *Cambden's Remains*.

Which many respect to be but a *panic* terror, and men do fear they justly know not what.

Browne's Vulgar Errors.

I left the city in a *panic* fright;
Lions they are in council, lambs in fight. *Dryden*.

PANIC, Polyenus says, originates from Pan, one of the captains of Bacchus, who with a few men put a numerous enemy to rout, by a noise which his soldiers raised in a rocky valley, favored with a great number of echoes. This stratagem making their number appear far greater than it was, the enemy quitted a very commodious encampment, and fled. Hence all ill-grounded fears have been called *panics*, or *panic* fears; and this gave occasion to the fable of the nymph Echo being beloved by the god Pan. Others derive the origin of it hence; that in the wars of the Titans against the gods, Pan was the first who struck terror into the hearts of the giants. Theon on Aratus says, he did it by the means of a sea-shell, which served him for a trumpet, whereof he was the inventor.

PANICLE, in botany, denotes a soft woolly beard, on which the seeds of some plants hang pendulous; as in millet, reeds, and hay. See *BOTANY*, Index.

PANICOLA, a town of Naples, in Lavoura.

PANICUM, in botany, a genus of the digynia order, belonging to the triandria class of plants; and in the natural method ranking in the fourth order, gramina. The calyx is trivalved; the third valve being very small. There are thirty-five species:

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|------------------------------|-----------------------------|
| 1. <i>P. arborescens</i> , | 13. <i>P. lichotomum</i> , |
| 2. <i>P. brevifolium</i> , | 14. <i>P. dactylon</i> , |
| 3. <i>P. brisoides</i> , | 15. <i>P. dimidiatum</i> , |
| 4. <i>P. capillare</i> , | 16. <i>P. distachion</i> , |
| 5. <i>P. clandestinum</i> , | 17. <i>P. divaricatum</i> , |
| 6. <i>P. coloratum</i> , | 18. <i>P. elatum</i> , |
| 7. <i>P. compositum</i> , | 19. <i>P. filiforme</i> , |
| 8. <i>P. conglomeratum</i> , | 20. <i>P. glaucum</i> , |
| 9. <i>P. coronum</i> , | 21. <i>P. grossarium</i> , |
| 10. <i>P. crus corvi</i> , | 22. <i>P. halvoium</i> , |
| 11. <i>P. crus galli</i> , | 23. <i>P. hirtellum</i> , |
| 12. <i>P. curvatum</i> , | 24. <i>P. italicum</i> , |

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|------------------------------|-------------------------------|
| 25. <i>P. latifolium</i> , | 31. <i>P. repens</i> , |
| 26. <i>P. lineare</i> , | 32. <i>P. sanguinale</i> , |
| 27. <i>P. miliaceum</i> , | 33. <i>P. verticillatum</i> , |
| 28. <i>P. patens</i> , | 34. <i>P. virgatum</i> , |
| 29. <i>P. polystachion</i> , | 35. <i>P. viride</i> . |
| 30. <i>P. ramosum</i> , | |

The species of Guinea-grass by some authors is classed as a panicum; but by expert botanists, who have lately examined the plant, it is called the hollyus polygamum. See *POLYGAMUM*.

PANINI (Paul), a painter of perspective and architecture. He was born at Placentia in 1691, and studied at Rome, where he designed every vestige of ancient magnificence. In his earlier pictures his composition is rich; the truth of his perspective exact; and his paintings are esteemed for the grandeur of the architecture, the clearness of his coloring, the beautiful figures he introduced, and the elegant taste with which he disposed them; but his later paintings have many faults. He died in 1758.

PANIONIA, in antiquity, a festival celebrated in honor of Neptune by people from all the cities of Ionia. In this festival, if the bull offered in sacrifice happened to bellow, it was accounted an omen of divine favor; because that sound was thought acceptable to Neptune.

PANIONIUM, a place in Asia Minor, at the foot of Mount Mycale, near Ephesus, where the deputies of the twelve cities of Ionia assembled to celebrate the above festivals, or to deliberate upon any other public business.

PANLANG, a town of Pegu, in the Birman empire, situated on the Rangoon branch of the Irrawaddy River, and formerly a place of great opulence and extent. It was taken by the celebrated Alompra, from the Peguers, in 1755, and is still a place of consequence. It is situated sixteen miles north-west of Rangoon.

PANNADE, *n. s.* In the manege, the curve of a horse.

PANNAH, a town of Hindostan, in the province of Allahabad, and district of Bundelcund. In the neighbourhood are the celebrated Panassa diamond mines of Ptolemy. They are situated in a range of hills of about twenty-four miles in length, and five in breadth, belonging to different chiefs. The richest of them is called Guddaseah, and produced the largest diamond now in Hindostan. The mines were formerly let out to contractors; but all stones exceeding a certain weight were the property of the chief; so that frequently the contractors were losers. During the reign of Akbar, in the sixteenth century, the revenue received by him on this account amounted to nearly £100,000 per annum; but after the decline of the Mogul empire, and the district came into the possession of rajah Chuttersal (about the year 1750), the profits did not exceed £50,000. Since that period we have no accurate estimate of them. Long. 80° 17' E., lat. 24° 43' N.

PANNALL, a parish of England, West Riding of Yorkshire, seven miles W.N.W. from Wetherby. Population 914.

PANNANACH, or **PANNANICK**, a village of Scotland, in Aberdeenshire, noted for its mineral waters. These waters issue from the north side of the hill of Pannanich, and are said to resem-

ble the Seltzer water in Germany, being strongly impregnated with aerial acid. The spring has been cleared and covered, and several houses have been erected for the accommodation of the visitors, who in summer are numerous, being attracted by the surrounding scenery, which is in the highest degree romantic and sublime. There is an inn for the visitors on the banks of the Dee, about a mile from the wells.

PAN'NEL, *n. s.* Fr. *paneau*; Belg. *pannul*; Ital. *panello*, of Lat. *pannus*. A rustic saddle.

A *pannel* and wanty, pack-saddle and ped, With line to fetch litter, and halters for head.

Tusser.

His strutting ribs on both sides showed

Like furrows he himself had plowed ;

For underneath the skirt of *pannel*,

'Twixt every two there was a channel. *Hudibras.*

PANNELA, or PANNELLA, a town and fortress of Bejapore, Hindostan. It was formerly deemed one of the strongest fortresses in India, and was only taken by the celebrated Mahratta chief Sevajee, by stratagem, in the year 1660. It was subsequently besieged in vain by the army of the king of Bejapore, but yielded to the arms of Aurungzebe, after his capture of Sambajee, about the year 1670. Near this place the British ambassador, Sir William Norris, had his audience of Aurungzebe, in the month of April 1701; and, after being kept nearly six months in the camp, was dismissed. It was recently in possession of the Mahrattas. Long. 74° 57' E., lat. 16° 50' N.

PANNICLE, or } A plant. See below.

PANNICK, *n. s.* }

The *pannicle* is a plant of the millet kind, differing from that, by the disposition of the flowers and seeds, which, of this, grow in a close thick spike: it is sowed in several parts of Europe, in the fields, as corn, for the sustenance of the inhabitants; it is frequently used in particular places of Germany to make bread.

Miller.

September is drawn with a cheerful countenance; and in his left hand a handful of millet, oats, and *pannicle*.

Peasam.

Pannick affords a soft demulcent nourishment.

Arbuthnot.

PANNICLE. See PANNICUM.

PANNICULUS CARNOSUS, in zootomy, a robust, fleshy tunic, situated in beasts between the skin and the fat; by means of which they can move their skin in whole or in part. It is altogether wanting in mankind.

PANN'IER, *n. s.* Fr. *panier*. A basket; particularly a basket in which fruit, or other things, are carried on a beast of burden.

The worthless brute

Now turns a mill, or drags a loaded life,

Beneath two *panniers* and a baker's wife. *Dryden.*

We have resolved to take away their whole club in a pair of *panniers*, and imprison them in a cupboard.

Addison.

PANNIPUT, PANIPATI. A town in the province of Delhi, fifty miles north by west from the city of Delhi. Lat. 29° 23' N., long. 76° 50' E. Famous for having been the scene of the two greatest battles ever fought in India. The first was in the year A. D. 1525, between the army of sultan Baber and that of the Delhi Patan emperor Ibrahim Lodi, in which the latter was slain, and his army totally discomfited. The

second took place in 1761, between the combined Mahomedan army, commanded by Ahmed Shah Abdalli, the sovereign of Cabul, and that of the Mahrattas, commanded by the Bhow Sedasiva. This place is about four miles in circumference, and was formerly surrounded by a brick wall, which partly remains. In the centre is the shrine of a Mahomedan devotee, named Shah Shereef ud Deen Abu Ali Cullinder, whose death happened in the 724th year of the Hegira. The imports are salt, grain, and cotton cloth; the surrounding country produces and exports coarse sugar.

PANNONIA, an extensive country of Europe, bounded on the east by Upper Mesia, south by Dalmatia, west by Noricum, and north by the Danube. It was divided by the ancients into Upper and Lower, or Superior and Inferior Pannonia. The boundary between these was the Arabo and Mount Cetina; the Upper Pannonia lying on the west, and the Lower on the east side. This division was made about the times of the Antonines. The inhabitants were of Celtic origin. Sirmium was the ancient capital of all Pannonia. Philip II. of Macedon, and his son Alexander, successively conquered the country. It was again invaded by Julius Cæsar, and conquered in the reign of Tiberius. It is now divided into the modern provinces of Bosnia, Carniola, Croatia, March, Sclavonia, and Windisch; and part of it is contained in Austria, Hungary, and Servia.—*Lucan.* iii. 95, vi. 220. *Plin.* iii. *Dion. Cass.* 49. *Strabo* iv. vii. *Ptol.* *Tibul.* iv. el. 1. 109. *Suet.* *Aug.* 20. *Jornand.* *Lempriere.*

PANOMPHEUS, from παν all, and ομφη voice, in antiquity, a designation given to Jupiter, because he was said to be the original author of all sorts of divination, having the books of fate, and out of them revealing either more or less, as he pleased, to inferior demons.

PANOPEUS, a son of Phocus and Asterodia, who accompanied Amphitryon in his war against the Teleboans. He was father of Epeus, who made the famous wooden horse by which Troy was taken.

PAN'OPLY, *n. s.* Gr. πανοπλια. Complete armour.

In arms they stood

Of golden *panoply*, refulgent host!

Soon banded.

Milton's Paradise Lost.

We had need to take the Christian *panoply*, to put on the whole armour of God. *Ray on the Creation.*

PANOPOLIS, Gr. Παν, and πολις, i. e. the city of Pan, an ancient town of Egypt, called also Chemmis and Achmim. See ACHMIM. Pan had a temple in it, where he was worshipped, and represented in a statue, fascino longissimo erecto.—*Diod.* v. *Strabo*, 17.

PANORAMA, from Gr. παν all, and οραμα view, a word recently introduced, to express a painting in oil or water colors, which represents an entire view of any country, city, or other natural objects, as they appear to a person standing in any situation, and turning quite round. To produce this effect, the painter or drawer must fix his station, and delineate correctly and connectedly, every object which appears as he turns

round, concluding his drawing by a connexion with where he began.

PANORMITA (Anthony), a native of Palermo in Sicily, one of the most learned men of the fifteenth century. He was secretary to Alphonso, king of Naples, and was esteemed the best poet of his age. He sold an estate to purchase a copy of Livy. He died in 1471.

PANORMUS, an ancient city of Sicily, built by the Phenicians, on the north-west coast between Lilythæus and Pelorus, with a capacious harbour. It was afterwards a principal town of the Carthaginians, and their strongest hold in the island. It was at last taken with difficulty by the Romans.—Thucyd. Polyb. Mela, ii. 7. Ital. xiv. 262. It is now called Palermo.

PANORPA, the scorpion fly, in zoology, a genus of insects belonging to the order of neuroptera. The rostrum is horny and cylindrical; there are two pappi, and three stemmata; the feelers are longer than the thorax. The body is of a black brown color, yellow on the sides, with a few spots of the same on the top. Its tail, formed by the three last segments of the abdomen, is of a maroon color; of these three segments, the last is the largest, almost round, and terminates in two hooks, which constitutes a tail like that of the scorpion. The wings, as long as the body, are diaphanous, reticulated with fibres and stripes of spots of a brown color. There are different varieties of this insect, consisting in the color of the wings. Some, instead of several stripes of spots upon their wings, have only a single black stripe, transverse and irregular, on the middle of the wing, the extremity whereof is also black; others have their wings entirely white, excepting the extremity, which is black. The forceps that is seen at the hinder part of this insect is used by the males to lay hold of their females in their amorous embraces: the threatening tail of the male does no mischief. This insect is found in meadows, by the sides of the ditches. There are four species, distinguished by the color and shape of their wings. See plate CCLXVI.

PANSA (C. Vibius), a Roman consul, who, with his colleague, A. Hirtius, pursued Cæsar's murderers, and was killed in a battle near Mutina. Hirtius and Pansa were the two last consuls of the Roman republic, who enjoyed the dignity of chief magistrates with full power. The consular authority after this dwindled into a mere title.

PANT, *v. n.* & *n. s.*

PANT'ESS, *n. s.*

PANT'ING,

PANTINGLY, *adv.*

Old Fr. *panteler*; barb. Lat. *panthelo*. To palpitate; beat with quick pulsations, as the heart in sudden terror, or after hard labor; heave the breast as for want of breath: hence to agitate, with intermission; to desire earnestly, taking *after* or *for* before the object: as a noun substantive, a palpitation or motion of the heart: pantess, in falconry, is the hawks; difficulty of breathing: panting and pantingly follow the senses of pant.

They *pant after* the dust of the earth on the head of the poor. *Amos* ii. 7.

Yet might her piteous heart be seen to *pant* and quake. *Spenser*.

Leap thou, attire and all,
Through proof of harness, to my heart, and there
Ride on the *pants* triumphing. *Shakespeare*.

She heaved the name of father
Pantingly forth, as if it prest her heart. *Id.*

Below the bottom of the great abyss,
There where one centre reconciles all things
The world's profound heart *pants*. *Crashaw*.

Pluto *pants* for breath from out his cell,
And opens wide the grinning jaws of hell. *Dryden*.
If I am to lose by sight the soft *pantings*, which
I have always felt when I heard your voice, pull
out these eyes before they lead me to be ungrateful.

Tatler.
Miranda will never see her eyes swell with fatness, or *pant* under a heavy load of flesh, till she has changed her religion. *Law*.

The whispering breeze
Pants on the leaves and dies upon the trees. *Pope*.

Who *pants* for glory, finds but short repose,
A breath revives him, and a breath o'erthrows. *Id.*

PANTÆNUS, a stoic philosopher, born in Sicily, in the reign of Commodus. He presided over the celebrated school of Alexandria, and was sent by Demetrius, bishop of Alexandria, to instruct the Indians. He was succeeded in his catechetical school by the famous Clemens, usually called CLEMENS ALEXANDRINUS (see that article), who, not long after his entering upon the office of catechist, wrote that celebrated work entitled, An Exhortation to the Gentiles, in which he exhibited the impiety and absurdity of heathenism, and the arguments in support of Christianity. Pantænus published some commentaries upon the Bible, which are lost.

PANTALARIA, or the ancient Cosyra, is a small island in the Mediterranean, belonging to Sicily, and situated between that island and the African coast. It has a circumference of thirty-four miles, and has a considerable elevation in some parts. The principal products are corn, olives, and cotton. The high grounds are covered with a species of bastard oak and caper trees; and in one of them the remains of a volcanic crater are apparent. The island is exposed to the incursions of the Barbary corsairs, who frequently land and carry off whole families. It belongs, under the title of a principality, to the house of Requisino, in Sicily. Inhabitants 6000. Sixty miles from Marsala, in Sicily, and about the same distance from Cape Bon, near Tunis. Long. 12° 26' 25" E., lat. 36° 45' 40" N.

PANTALOON, *n. s.* Fr. and Span. *pantalón*; Ital. *pantalone*. Dr. Merrick says from the Ital. of *plant the lion*, an old Venetian war-cry. A species of long breeches, 'anciently worn,' says Dr. Johnson; but modern times have converted them into a common garment.

The sixth age shifts
Into the lean and slippered *pantaloon*,
With spectacles on nose, and pouch on side. *Shakespeare*.

The French we conquered once,
Now give us laws for *pantaloons*,
The length of breeches and the garters. *Hudibras*.

PANTALOON, on the theatre, is a buffoon or masked person, who performs high and grotesque dances, and shows violent and extravagant

postures and airs. The word is likewise used for the habit or dress these buffoons usually wear ; which is made precisely to the form of their body, and all of a piece from head to foot. Hence those who wear a habit of this kind under their other clothes are called pantaloons of Venice.

PANTARE, an island in the Eastern seas, about thirty miles in length by twelve in average breadth, separated from the coast of the island of Lomaben by the strait of Alvo, and from the west coast of Ombay by a channel called the strait of Panter. Long. $124^{\circ} 30' E.$, lat. $8^{\circ} 10' S.$

PANTARBE, in natural history, a name given to an imaginary stone, the effects of which upon gold were similar to those of the loadstone upon iron. The ancients, as well as some moderns, had an opinion that there was such a stone ; and the amphitane of Pliny is described as possessing this remarkable quality ; but there is no reason, from any experiment well ascertained, to believe that there ever was such a stone.

PANTHEA, the beautiful and virtuous wife of Abradates, king of Susa. She was taken prisoner by Cyrus the Great, who treated her well, but would not visit her, lest he should be ensnared by her charms. Abradates, hearing of this, laid down his arms, joined Cyrus with all his forces, and fought for him. Being afterwards killed in battle, Panthea killed herself on his body, and Cyrus raised a monument to their memory.—*Xenoph. Cyrop.*

PANTHEA, in antiquity, single statues composed of the figures or symbols of several different divinities together. F. Joubert, who calls them panthea, and who has remarked them sometimes on medals, says, their heads are most commonly adorned with the symbols or attributes belonging to several gods. An instance of this appears in a medal of Antoninus Pius ; which represents Serapis by the bushel it bears ; the sun, by the crown of rays ; Jupiter Ammon, by the ram's horns ; Pluto, by the large beard ; and Esculapius, by the serpent twisted in his hand. M. Boudelot, in a dissertation on the Lares, observes, that the panthea had their origin from the superstition of those who, taking several gods for the protectors of their houses, united them all in the same statue, by adorning it with the several symbols proper to each of these deities.

PANTHEISM, a philosophical species of idolatry leading to atheism, in which the universe was considered as the supreme God. Who was the inventor of this absurd system is not known ; but it was of early origin, and differently modified by different philosophers. Some held the universe to be one immense animal, of which the incorporeal soul was properly their god, and the heavens and earth the body of that god ; whilst others held but one substance, partly active and partly passive : and therefore looked upon the visible universe as the only Numen. The earliest Grecian pantheist of whom we read was Orpheus, who called the world the body of God, and its several parts his members, making the whole universe one divine animal. According to Cudworth, Orpheus and his followers believed in the immaterial soul of the world ; therein agreeing with Aristotle, who certainly held that

God and matter are co-eternal ; and that there is some such union between them as subsists between the souls and bodies of men. With respect to the universe being God, and all things divine and human being modifications of mere matter, the stoics undoubtedly agreed with Anaximander and his followers ; for the school of Zeno held but one substance. This impious doctrine, that all things are God, and that there is but one substance, was revived in modern times by Spinoza, an apostate Jew. See **PAN** and **SPINOZA**.

PANTHEON, a beautiful edifice at Rome, anciently a temple dedicated to all the gods ; but now converted into a church, and dedicated to the Virgin and all the martyrs. It is generally thought to have been built by Agrippa, son-in-law to Augustus, because it has the following inscription on the frieze of the portico :—' M. Agrippa L. F. cos tertium fecit.' Several antiquarians and artists, however, have supposed that the pantheon existed in the time of the commonwealth ; and that it was only embellished by Agrippa, who added the portico. Be this as it may, however, the pantheon, when perfected by Agrippa, was an exceedingly magnificent building, the form of whose body is round or cylindrical, and its roof or dome is spherical ; it is 144 feet diameter within ; and the height of it, from the pavement to the grand aperture on its top, through which it receives the light, is just as much. It is of the Corinthian order. The inner circumference is divided into seven grand niches, wrought in the thickness of the wall ; six of which are flat at the top ; but the seventh, opposite to the entrance, is arched. Before each nich are two columns of antique yellow marble fluted, and of one entire block, making in all fourteen, the finest in Rome. The whole wall of the temple, as high as the grand cornice, inclusive, is cased with divers sorts of precious marble in compartments. The frieze is entirely of porphyry. Above the grand cornice arises an attic, in which were wrought, at equal distances, fourteen oblong square niches : between each nich were four marble pilasters, and between the pilasters marble tables of various kinds. This attic had a complete entablature ; but the cornice projected less than that of the grand order below. Immediately from the cornice springs the spherical roof, divided by bands, which cross each other like the meridians and parallels of an artificial terrestrial globe. The spaces between the bands decrease in size as they approach the top of the roof ; to which, however, they do not reach, there being a considerable plain space between them and the great opening. That so bold a roof might be as light as possible, the architect formed the substance of the spaces between the bands of nothing but lime and pumice stones. The walls below were decorated with lead and brass, and works of carved silver over them ; and the roof was covered on the outside with plates of gilded bronze. There was an ascent from the springing of the roof to the very summit by a flight of seven stairs. The portico is composed of sixteen columns of granite, four feet in diameter, eight of which stand in front with an equal intercolumniation all along. The ascent to the

portico is by eight or nine steps. Such was the pantheon, the richness of which induced Pliny to rank it among the wonders of the world. The eruption of Vesuvius, in the reign of Tiberius, damaged the pantheon very considerably: it was repaired by Domitian and Adrian. But the pantheon is more indebted to Septimius Severus, than to any one since its erection. Septimius bestowed essential reparations upon it, as appears from an inscription upon the architrave. The temple subsisted in all its grandeur till the incursion of Alaric. Zozymus relates, that the Romans having engaged to furnish this barbarian prince with 3000 lbs. of gold, and 5000 lbs. of silver, upon condition that he should depart from their walls, and it being impossible to raise those sums, they stripped the temples of their statues and ornaments of gold and silver. Genserick, king of the Vandals, thirty-nine years after, took away part of their marbles; and loaded one of his ships with statues. On this occasion the inestimable works of Diogenes became the prey of this barbarian. The Christian emperors had issued edicts for demolishing the pagan temples. But the Romans spared the pantheon, which suffered no damage from the zeal of the pontiffs, and other enemies of idolatry, before the first siege of Rome by Alaric. It remained so rich, till about A. D. 655, as to excite the avarice of Constantine II., who came from Constantinople and pillaged the pantheon of its brazen coverings, which he transported to Syracuse, where they soon after fell into the hands of the Saracens. About fifty years before this, pope Boniface IV. had obtained the pantheon of the emperor Phocas, to make a church of it. The artists of these days spoiled every thing they laid their hands upon. After the devastations committed by the barbarians, Rome was contracted within a narrow compass. The pantheon, standing at the entrance of the Campus Martius, was surrounded with houses, which spoiled the fine prospect of it; and some of them were built close to its walls. Pedlars' sheds were built within its portico, and the intercolumniations were bricked up to the irreparable damage of the matchless pillars, of which some lost part of their capitals, and others were chiseled out six or seven inches deep, and as many feet high, to let in posts. This disorder continued till the pontificate of Eugene IV., who had all the houses cleared away, and so the miserable barracks in the portico were knocked down. Benedict II. covered it with lead, which Nicholas V. renewed in a better style. Raphael Urban, who had no equal as a painter, and as an architect no superior, left a considerable sum by his will for the reparation of the pantheon, where his tomb is placed. La Vagua, Udino, Hannibal Carracci, Flamingo Vacca, and Archangelo Corelli, did the same. Pope Urban VIII. was a protector or practiser of the arts. He repaired it; but while he built up with one hand, he pulled down with the other. He caused two belfries of a wretched taste to be erected on the ancient front work, and he divested the portico of all the remains of its ancient grandeur, viz. the brazen coverture of the cross beams, which amounted to a prodigious quantity. This pope, who was of the fa-

mily of Barbarini, presented as much of this metal to his nephew as was sufficient for the decoration of his new palace; on which occasion this pasquinade was stuck up:—

Quod non fecerunt Barbari fecere Barbarini.

Alexander VII. did what Urban had neglected to do. He ordered search to be made for pillars to match those of the portico of the pantheon; and some were found of the very same model. He also caused all the old houses before the portico to be pulled down, and the rubbish to be cleared away which covered the steps, and the bases of the pillars. Clement IX. enclosed the portico with iron rails. Several later popes have added to its decorations, which were all in the taste of the times they were done in; and the body of the edifice and its architecture gained nothing from them.

PANTHEON, the name of another temple at Rome, dedicated to Minerva, as the goddess of medicine. It was in the form of a decagon, and the distance from one angle to another measured twenty-two feet and a half. Between the angles there were nine round chapels, each of which was designed for a deity; and over the gate there was a statue of Minerva.

PANTHEON. In the Escorial is a magnificent chapel, called pantheon, thirty-five feet in diameter, and thirty-eight feet high from the pavement, which is composed of marble and jasper inlaid. The whole inside of the chapel is of black marble, except the luthern, and some ornaments of jasper and red marble. In this chapel are deposited the bodies of the kings and queens; there are only places for twenty-six, and eight of them are already filled.

The PANTHEON OF ATHENS was in many respects little inferior to the Roman one built by Agrippa. The Greek Christians also converted it into a church, dedicated to the Virgin, under the name of Panagia; and the Turks changed it into a mosque.

The PANTHEON OF NISMES was a temple in that city, wherein were twelve niches or statues, supposed to have been destined for the twelve great gods.

PANTHEON, in literary history, a name assumed by a speculative society, established at Edinburgh for public debate upon various subjects, and carried on for above twenty years. It was first instituted in December 1770, or 1771, by a number of young gentlemen, mostly engaged in the studies of law, physic, or divinity, under the name of the Debating Society, and held for upwards of two years in St. John's Lodge, Canongate. But, some differences having arisen among the members respecting its management, a schism took place, and the principal speakers erected a new society under the name of Pantheon, in the end of 1773, which met weekly, first in St. Giles's Lodge, and afterwards in Mary's Chapel, for above eighteen years. The objects of the institution were to mingle the utile with the dulce; public improvement with public amusement, by accustoming the members and all visitors, who inclined to take part in the debates, to a facility in public speaking. Such an institution, it was sometimes remarked; had it been established in

London, in the early years of the celebrated M. Addison, would, in all probability, have accustomed him to deliver himself with ease, and have prevented his failure in the only public oration he ever attempted to make. The subjects were extremely various;—literary, speculative, philosophical, moral, historical, biographical, political, and sometimes religious. A subject, in the form of an alternative question, was announced from the chair at the one meeting, discussed at the next, and at the conclusion of the debate decided by a vote of the company. The society was for many years extremely popular, and often very much crowded by ladies and gentlemen of the first rank. Divines, physicians, writers to the signet, advocates, baronets, members of parliament, and even peers, honored it with their attendance, and occasionally took part in the debates; on which occasions they were admitted honorary members. On questions of public importance, very capital orations were delivered in it. Its popularity was not a little increased by that part of its constitution which devoted its funds, after paying the necessary charges, to charity; particularly to the relief of literary people. These funds arose chiefly from the weekly contribution of sixpence paid by each visitor for admission. The chief cause of its being given up, and the debates suspended, was the political ferment that took place in the public mind, in 1791-2, in consequence of the French Revolution. Accordingly, it was thought improper to continue a society, the laws of which authorising full freedom of debate, seditious or treasonable persons might have made an unjustifiable use of this privilege; and no meeting has been held since 1791.

PANTHER, *n. s.* Fr. *panthere*; Lat. *panthera*; Gr. *παρθύρ*. A spotted wild beast: a pard.

An' it please your majesty,

To hunt the *panther* and the hart with me,

With horn and hound.

Shakespeare.

Pan, or the universal, is painted with a goat's face, about his shoulders a *panther's* skin.

Peachment.

The *panther's* speckled hide

Flowed o'er his armour with an easy pride. *Pope.*

PANTHER, in zoology. See **FELIS**.

PANTHOIDES, a patronymic of Euphorbus, the son of Panthous; applied also to Pythagoras, who pretended that the soul of that hero had transmigrated into his body. See **EUPHORBUS**.

PANTICAPEUM, an ancient town of Taurica Chersonesus, built by the Milesians, and governed by its own laws, till it was conquered by the kings of Bosphorus, and became their capital. Mithridates the Great died in it. (Pliny. *Strabo*.) It is now called Kerche.

PANTLER, *n. s.* Fr. *panetier*. An officer in a great family who keeps the bread.

When my old wife lived,

She was both *panter*, butler, cook.

Shakespeare.

He would have made a good *panter*, he would have chipped bread well.

Id. Henry IV.

PANTOFLE, *n. s.* Fr. *pantoufle*; Ital. *pantofola*. A slipper.

Melpomene has on her feet, her high cothurn or tragick *pantofles* of red velvet and gold, beset with pearls.

Peachment.

PANTOGRAPH, in the arts, the name given to an instrument for copying drawings, so contrived that the copy may either be of the same, a greater, or a smaller size than the original. It consists of four moveable bars fixed together by four pivots, and forming a parallelogram. At the extremity of one of these bars is a point, which is drawn over the lines of the original plan, whilst a pencil fixed at the end of the opposite bar, traces on paper the lines of the copy. The pencil is placed in a hollow cylinder, with a weight on the top, by means of which, the point of the pencil is made to press on the paper. The improvements in the construction of different parts of the pantograph described in the *Mémoires de l'Académie des Sciences*, 1743, have been generally adopted, but the instrument is now scarcely ever used, artists in general preferring the method of squaring the drawings to this tedious and inaccurate instrument.

PANTOMIME, *n. s.* Fr. *pantomime*; Gr. *παρ* and *μυμος*, a mimic; one who has the power of universal mimicry; a buffoon; a scene; a tale exhibited in gesture or dumb show.

Not that I think those *pantomimes*

Who vary action with the times,

Are less ingenious in their art,

Than those who duly act one part. *Heaistras.*

He put off the representation of *pantomimes* till late hours, on market-days.

Arbutnot.

PANTOMIMES made a part in the theatrical entertainments of the ancients: their chief employment was to express, in gestures and action, whatever the chorus sung, changing their countenance and behaviour as the subject of the song varied. They were very ancient in Greece, being derived from the heroic times according to some; but, however this may be, they were certainly known in Plato's time. In Rome it was as late as the time of Augustus before they made their appearance. As to their dress it was various, being always suited as nearly as possible to that of the person they were to imitate. The crocata was much used among the Roman pantomimes, in which and other female dresses they personated women.

PANTRY, *n. s.* Fr. *paneterie*; Ital. *panateria*; barb. Lat. *panarium*. A room or closet in which bread and other provisions are kept.

The Italian artisans distribute the kitchen, *pantry*, bakehouse under ground.

Watson's Architect.

What work they make in the *pantry* and the larder.

L'Estrange.

He shuts himself up in the *pantry* with an old gipsy, once in a twelvemonth.

Addison's Spectator.

PANUCO, a town and district of Mexico, in the intendency of Vera Cruz, on the shore of the river Panuco. It consists of some very neat houses of stone, with roofs of palm leaves. 143 miles north, with a slight inclination east of Mexico. Long. 98° 52' W., lat. 22° 48' N.—A river of this name falls into the gulf of Mexico.

PANWELL, a large town of the province of Aurungabad, Hindostan, twenty-seven miles east of Bombay. It is situated on the banks of the Pan, about seven miles from its mouth. About the year 1680 the Mahratta chief Sevajee built here a fort, part of which still remains, to protect the inhabitants against the incursions of the Siddees

or Ethiopians. Panwell now belongs to the British, and carries on a considerable trade. It is situated in long. 73° 13' E., lat. 19° N'.

PANY ISLE, one of the Philippines, 110 miles in length, by thirty-eight in average breadth. Numerous villages are very regularly built on the declivity of the higher grounds, but the climate is generally considered unhealthy, on account of the morasses. Deer, hogs, buffaloes, and wild animals, are found in the interior, and the coast abounds with cocoa trees. Cattle and horses range at pleasure in the uncultivated parts.

The island is said to contain mines of gold and silver, and the inhabitants manufacture cotton handkerchiefs and cloths. The establishment of the Spaniards on this island are at Iloilo and Antigua, on which coast there is good anchorage; but their government here is on a most wretched footing, and cannot defend its unfortunate subjects from the incursions of pirates, who plunder vessels in the harbours, and carry off their crews into slavery. Long. 122° 33' E., lat. 11° 15' N.

PANZACCHIA (Maria Helena), an Italian paintress, born at Bologna, in 1668, of a noble family. She learned design under Emilio Taruffi, and in a short time acquired great readiness in composition, correctness of outline, and a lovely tint of coloring. She also excelled in painting landscapes; and her works were exceedingly prized.

PAO, SAN JUAN BAPTISTA DEL, is a city of Venezuela, Colombia, situate at fifty leagues south-west of Caracas, in 9° 20' N. lat.

The river Pao, which runs south of the town, formerly discharged itself into the Lake Tacarigua; but an earthquake and inundation have altered its course: it now flows into the Apura.

San Juan consists of a church and several handsome streets on the Pao: and this city is remarkable in having only the proprietors of cattle for its inhabitants. 5400 persons form its population.

The heat would be intolerable here, if it were not tempered by the violence and frequency of the north-east wind: but the place is now very healthy; and the pasturage of the neighbourhood excellent; the settlements numerous, and stocked with mares, horses, mules, and horned beasts. Besides the emoluments arising from their sale, still further are derived from that of a quantity of cheese made here. If a canal were to be cut from the Tacarigua to the Pao, it would be easy to establish a communication from Caracas to Guiana, and even as far as the Brasils. Art might, with so much the more ease, establish this navigation, as it would have only to deepen the bed of the Pao, for the first ten or twelve leagues from its source. The advantages which commerce would derive from it, are incalculable; because, in time of war especially, the province of Venezuela would preserve an intercourse with Guiana, in spite of the cruisers of the enemy. It does not require a very penetrating genius to perceive that by this way, which the enemy could not impede, the most prompt assistance could be sent to Guiana, in case she should be threatened with an invasion.

PAOLI (Hyacinth), a Corsican of a good family. Having acquired reputation, he was elected one of the chief magistrates of the island in 1735. But the various revolutions Corsica underwent, and the oppressions of the Genoese, obliged him to retire to Naples with his family; whence, in 1755, he sent his celebrated son, Pascal Paoli, then in his twenty-ninth year, to assist his countrymen in regaining their liberty, who was appointed by them commandant-general on his arrival.

PAOLI (Pascal de), was born in the island of Corsica in 1726. His father Hyacinth Paoli, after laboring in vain to establish the freedom of his country, went to Naples, where Pascal was educated in the Jesuits' college. In his twenty-ninth year he was chosen generalissimo of Corsica, where he exerted himself in promoting the independence of the republic. The Genoese, however, having made a transfer of the island to France, that power sent such an overwhelming force into it as compelled Paoli to seek an asylum in England, where he obtained a pension of £1500 per annum. On the breaking out of the French revolution, he returned to Corsica, and prevailed upon his countrymen to submit to the English government; after which, disagreeing with the viceroy, he returned to London, and died in 1807.

PAO-TING, a city of China, of the first rank, in the province of Pe-che-lee. Among the cities of this province, it ranks next to Peking, and is the residence of a viceroy. It is very agreeably situated in a fertile and beautiful district, seventy-seven miles S. S. W. of Peking.

PAP, *n. s.* } Bleg. *pappa*; Ital. *papa*;
PAPESCENT, *adj.* } Lat. *papa*, *papilla*. The nipple or teat, particularly of the human female; any light food made for infants; the pulp of fruit: papescent is containing pap.

Some were so from their source endued
By great dame Nature, from whose fruitful pap
Their well-heads spring. *Spenser.*

Out, sword, and wound

The *pap* of Pyramus.

—Ay, that left *pap*, where heart doth hop.

Shakespeare.

Sleep then a little, *pap* content is making. *Sidney.*

The noble soul by age grows lustier;
We must not starve, nor hope to pamper her
With women's milk and *pap* unto the end.

Donne.

Let the powder, after it has done boiling, be well beaten up with fair water to the consistence of thin *pap*. *Boyle.*

An infant making to the *paps* would press
And emets, instead of milk, a falling tear.

Dryden.

In weaning young creatures, the best way is never to let them suck the *paps*.

Ray on the Creation.

That Timothy Trim and Jack were the same person, was proved, particularly by a mole under the left *pap*. *Arbutnot.*

PAPA', *n. s.* Lat. *papa*; Gr. *παππας*; Pers. *baba*; Arab. *baaba*. A fond name for father in many languages.

Where there are little masters and misses in a house, bribe them, that they may not tell tales to *paps* and mamma. *Swift.*

PAPA, in geography, a small but strong town of Lower Hungary, in the county of Vespri. In 1596 the garrison revolted to the Turks, but it was soon retaken by Matthias. It again revolted, and was again retaken from the Turks in 1683, and is subject to the house of Austria. It is seated on a mountain, near the Marchaez; forty-five miles west of Buda. Long. 18° 20' E., lat. 47° 26' N.

PAPA, or **PAPA STOUR**, i. e. Great Papa, an island of Scotland, in Shetland, a mile west of Main-land, in the parish of Walls and Sandness, about two miles long, and above one broad. The surface is level, the soil sandy; but in a good season, when well manured with sea-ware, yields rich crops of barley, oats, and potatoes, as well as excellent grass. It has several small harbours, which afford safe shelter for the fishing boats, and the beaches are convenient for drying the fish. These advantages have induced a great fishing company from Northumberland to erect drying houses upon it, and send vessels to the fishing. In 1792 it had 285 inhabitants. It has a singular cave through which the sea flows far under the rocks.

PAPA, or **PAPA STRONSAY**, an island of Orkney, half a mile north-east of Stronsay, and three miles in circumference. The surface is level, and the soil so fertile that with little improvement it might be rendered one continued corn-field. There are ruins of two chapels on it, dedicated to St. Nicholas and St. Bridget. Mid-way between these is an eminence, called Earl's Know, which has many graves, containing uncommonly large human bodies.

PAPA, or **PAPA WESTRAY**, an island of Orkney, three miles north-east of Westray, and twenty-five from Kirkwall; four miles long, and one broad. Its form is oval; and the soil is so very fertile that it is reckoned the best arable and pasture-land in the Orkneys. It is divided into twenty-four plough-gates, and contained 240 inhabitants in 1792. About seventy tons of kelp are manufactured annually.

PAPACY, *n. s.* } Ital. *papa*, the pope. Po-
PAPAL, *adj.* } pedom; the office, state, or
 dignity, of the pope, or bishop of Rome; papal is relating to or taught by the pope or popery: agreeing with the doctrine of the Romish church; terms like papist, papistical, &c. are often used in unmeaning and unjustifiable reproach. See **ROMAN CATHOLICISM**.

The pope released Philip from the oath, by which he was bound to maintain the privileges of the Netherlands; this *papal* indulgence hath been the cause of so many hundred thousands slain. *Raleigh*.

Now there is ascended to the *papacy* a personage, that though he loves the chair of the *papacy* well, yet he loveth the carpet above the chair. *Bacon*.

The **PAPAL STATE**, or **STATES**, State of the Church, or Ecclesiastical State, so called as forming the temporal dominion of the pope, comprises a country of Italy 240 miles in length from north to south, but of very unequal breadth, being in the central part above 100 miles, and in other parts only twenty or thirty broad. Its superficial extent exceeds 17,000 square miles; but, for so fine a country, it is thinly peopled, containing less than 2,500,000 inhabitants. On

the north it is bounded by the Po, which separates it from the Austrian dominions; on the west by the grand duchy of Tuscany; the Adriatic on the east, and the kingdom of Naples on the south. The congress of Vienna transferred to Austria the Ferrarese territory to the north of the Po, and the French revolution deprived the pope of the districts of Avignon and the Venaisin; but these are the only territorial losses sustained for many years by the papal state.

By the following return, made in 1817, Rome, the capital, and its circuit, contain 241,500

I. The Legations and Delegations of the first class.

| | |
|--------------------------|---------|
| Bologna, legation | 286,426 |
| Ferrara, legation | 174,155 |
| Forli, district | 164,651 |
| Ravenna, legation | 143,199 |
| Urbino and Pesaro, duchy | 196,424 |

II. Delegations of the second class.

| | |
|--|---------|
| Ancona, Mark | 159,047 |
| Fermo, Mark | 88,471 |
| Frosinone and Pontecorvo, principality | 163,372 |
| Macerata, province | 181,003 |
| Perugia, district | 182,673 |
| Spoletto, duchy | 104,380 |
| Viterbo, district | 116,369 |

III. Delegations of the third class.

| | |
|--------------------------|--------|
| Ascoli, district | 69,507 |
| Benevento, duchy | 20,184 |
| Camerino, Mark | 41,672 |
| Civita Vecchia, district | 23,845 |
| Rieti, district | 68,345 |

Total 2,425,223

This territory is traversed from north-west to south-east by the Appennines, which moderate the violent heats of summer, and give rise to the Tiber and a number of minor streams. In the valleys, among the lower ranges of the Appennines, are several large lakes. The principal are those of Perugia, Bolsena, and Bracciano. On the south-west are the Pontine marshes, which corrupt the atmosphere for many miles round; though for the last thirty years canals for draining off these waters have been dug and slowly carried forward: if carefully kept up and extended they would soon, it is thought, add a valuable agricultural tract to the state.

The upper part of the country, comprehending the Marca d'Ancona, the duchy of Spoleto, and part of the legations, enjoys a fine climate, and is well cultivated, producing all kinds of corn and pulse, with excellent wine, fruit, oil, silk, flax, and hemp. Various spots are also favorable to pasturage; so that the rearing of cattle and sheep is prosecuted with success, and great quantities of wool produced. But the Maremma, or lower provinces, towards the Mediterranean, present a very different picture. Although the soil is rich, not a twentieth part is in any tolerable cultivation; and the country is almost deserted from the unwholesomeness of its air. The worst season begins about the middle of July, and continues till the rainy season in October.

Various reasons have been assigned for this, such as the scorching winds of the south, the large quantity of sea-weed thrown upon the coast, the collections of stagnated water, the sulphurous exhalations of the neighbourhood, &c. But a grand cause of evil is the troubles of former ages, and the recent course of weak and inefficient government. Lands are held by short and precarious leases; the time of labor is abridged by endless holidays; numbers of idlers subsist under the characters of monks and pilgrims; and the government has the right of pre-emption in regard to corn and cattle. In consequence, the farm houses are thinly scattered and meanly built; while the laboring people are wholly neglected as a class. However, the present pontiff, by the abolition of the remaining feudal usages, has made a considerable step in favor of this portion of the state.

The manufactures carried on here are generally undertaken by public institutions, under the direction of some ecclesiastic, and are often supported by an annual allowance from government. On this plan are several woollen manufactories of coarse goods; some silk manufactories, particularly at Bologna, the crapes and gauzes of which place are known throughout Europe. At Rome there is a considerable fabric of tapestry. Foreign leather being prohibited, several extensive tanneries have been established, and this manufacture is perhaps the most thriving of any. In 1770 there was established, at the expense of the apostolic chamber, a manufactory of calicoes, and it has been prosecuted with success; but the workmen are chiefly foreigners. Hats, coarse linens, and hardware, are likewise made in the papal dominions. The chief mineral products are marble, rock-salt, sulphur, and alum.

The little trade carried on in the papal harbours is almost entirely in foreign hands. The chief article of export is wool, which is sent to France and Switzerland, and often returned in a manufactured state. Another large article of export is alum. The imports consist of foreign manufactures, fish, such as tunny from Sicily, cod from Newfoundland, and, above all, pilchards from England. The chief sea-ports are Ancona on the east coast, and Civita Vecchia on the west. Accounts are here kept in scudi, or Roman crowns of 4s. 3d. sterling value, each containing ten paoli or 100 bajocchi.

The pope is invested here with absolute power, both spiritual and temporal, the government being considered a theocracy. The candidates for the tiara are necessarily members of the college of cardinals, and for some time back they must be Italians by birth. The election, which rested for several centuries with the nobility, clergy, and citizens of Rome, was transferred in the year 1059 to the college of cardinals, the number of the latter being nominally seventy, but seldom complete. The chief ministers of state are the cardinal camerlingo, at the head of the apostolic chamber, and minister of finance; the cardinal secretary of state for foreign affairs; and the cardinal datary, who has the patronage of vacant livings, the dispensations for marriages, and the charge of whatever relates to an-

nates or first fruits. To these are added the cardinal vicar, who acts for his holiness as bishop of Rome; the cardinal chancellor, whose functions correspond to those of keeper of the great seal in England; the cardinal auditor, or minister of justice; and, finally, the cardinal secretary of briefs.

The consistory is an assembly of cardinals held under the personal presidency of the pope, and may be either private or public. The former is commonly held once a fortnight. A public consistory is a meeting of all the cardinals, held once a month, when his holiness gives audience to foreign ambassadors. The name of 'congregation' is given to a board or commission held under a cardinal or other prelate. The principal are the Congregation of Ecclesiastical Immunities; one for drawing bulls and dispensations; another for superintending the different communities or corporations; the office of the inquisition (whose powers have been greatly moderated of late); the Congregation of the Index, for aiding the inquisition in regard to prohibited books; the Congregation of Rites, for the regulation of ceremonies throughout the Catholic church; and that for the direction of foreign missions. In the different provinces magistrates hear cases in their first stage, and pass sentence in all except capital charges. Bologna, Ferrara, and Romagna, are the three legations, so called because they are governed by a cardinal, deputed by the pope for three years at a time. In the other provinces, every place with the name of a city has a prelate sent from Rome as a governor. In small places the chief magistrates are sometimes laymen. Generally speaking, the administration throughout the country is mild; but the absurd idea of sacrificing the interests of the provinces to those of the capital obtains every where.

The laws in force are the edicts and ordinances of the different pontiffs, the code of Justinian, and the Pandects; but the reigning pope may alter or annul the existing laws: and each minister acting as a judge, and having a court apart, increases greatly the number of law suits. The principal criminal tribunal for laymen is the *sagra consulta*, whose authority extends over the whole of the state except the city of Rome. The procedure of this, as of almost all other courts, is characterised by great tardiness and secrecy. Although of course the inhabitants of this state are almost all Catholics, in the large towns there are Protestants of foreign extraction, and many Jews. The number of bishops is about thirty. Literature cannot be called in a flourishing state, though there are numerous learned institutions in Rome, and all the principal towns.

Before the late revolutions the papal revenue was about £600,000 a year, chiefly derived from local taxes; the produce of the annates and dispensations having done little more, in later times, than discharge the expenses of the boards appointed to manage them. The concourse of pilgrims to Rome is said to be by no means productive of revenue. The taxes consist in duties on wine and brandy; dues on bread and butchers' meat consumed in Rome; customs on imports; and, finally, in a lottery.

The papal troops, including the militia, do not exceed 6000 or 7000. Rome is protected by the castle of St. Angelo. The other fortifications are Civita Vecchia, Urbino, and Perugia. The navy consists of a few galleys and armed vessels stationed at Civita Vecchia, and capable of repelling the inroad of a corsair, but of no use against men of war, and incapable in rough weather of keeping the sea.

The history of the papal see will more properly occupy a portion of our article *ROME*. It may suffice in this place to notice that in the middle of the eighth century the popes first began to acquire lands and temporal possessions. In 1073 the imperious Gregory VII. arrogated supreme dominion both in church and state: from 1307 to 1377 the residence of the pope was at Avignon; and, from 1379 to 1429, there existed a violent schism, during which there were two, and at one time three, dignitaries assuming the title of pope, and acknowledged by different states of Europe. This considerably weakened the papal influence, and paved the way for the Reformation in 1517. Next came the wars of religion, which continued at repeated intervals until the peace of Westphalia in 1648. After this the business of the papal see was in a great measure confined to arrangements relative to particular orders, and to the formation of concordats with Catholic countries. Matters went on thus until the interests of the church were attacked by the measures of the emperor Joseph II., and the French revolution. The French convention proceeded to a total rejection of the papal authority in France; the territory of the Holy See was invaded in 1796 and 1797, and the French were on the eve of entering Rome; but peace was obtained by the payment, it is said, of £1,500,000 sterling, and a great cession of territory. Still more serious oppression was exercised by the French directory in 1798; but Buonaparte, on attaining supreme power, affected to respect the pope, while he made him instrumental to his own views. He concluded a concordat for France in 1802; and two years after the pope repaired to Paris to crown him emperor. But this cordiality was of short duration. The pope had too strong feelings of independence for the new king of Italy: Rome was occupied in 1808 by the French troops, and the pope conveyed a prisoner, first to Savona, and afterwards into France, where he remained until 1814, when the success of the allies restored him to most of his former possessions and prerogatives. See *ROME*.

PAPAYER, the poppy. See *BOTANY*, Index. A genus of the monogynia order, and polyandria class, natural order twenty-seventh, *rhœadæ*: *cor.* is tetrapetalous: *cal.* diphyllous: *caps.* bilocular, opening at the pores below a persisting stigma.

1. *P. album*, or *somniferum*, the white, or *somniferous* garden poppy, rises with an upright smooth stalk, dividing or branching a yard or more high; garnished with large, deeply jagged, amplexicaule, smooth leaves; and terminated by large, spreading, dark purple, and other colored flowers, in the varieties, having smooth cups and capsules. There are many varieties, some of

them extremely beautiful. The white officinal poppy is one of the varieties of this sort. It grows often to five or six feet, having large flowers, both singles and doubles, succeeded by capsules or heads as large as oranges, each containing about 8000 seeds. In the province of Bahar, in the East Indies, the poppy seeds are sown in October and November, at about eight inches distance, and well watered till the plants are about half a foot high, when a compost of dung, nitrous earth, and ashes, is spread over the areas; and a little before the flowers appear they are again watered profusely till the capsules are half grown, at which time the opium is collected; for when fully ripe they yield but little juice; two longitudinal incisions from below upwards, without penetrating the cavity, are made at sunset for three or four successive evenings; in the morning the juice is scraped off with an iron scoop, and worked in an iron pot in the sun's heat till it is of a consistence to be formed into thick cakes of about four pounds weight; these are covered over with the leaves of poppy, tobacco, or some other vegetable, to prevent their sticking together, and in this situation they are dried. The *somniferous* quality of the poppy resides in the milky juice of the capsule. See *OPIMUM*. It grows in England, generally in neglected gardens, or uncultivated rich grounds, and flowers in July and August. This species is said to have been named white poppy from the whiteness of its seeds; a variety of it, however, is well known to produce black seeds; the double-flowered white poppy is also another variety; but, for medicinal purposes, any of these may be employed indiscriminately, as there is no difference in their sensible qualities or effects. The seeds, according to some authors, possess a narcotic power, but there is no foundation for this opinion; they consist of a simple farinaceous matter, united with a bland oil, and in many countries are eaten as food. As a medicine, they have been usually given in the form of emulsion, in catarrhs, stranguries, &c. The heads or capsules of the poppy, which are directed for use in the pharmacopœias, like the stalks and leaves, have an unpleasant smell, somewhat like that of opium, and an acrid bitterish taste. Both the smell and taste reside in a milky juice, which more especially abounds in the cortical part of the capsules, and in its concrete state constitutes the officinal opium. These capsules are powerfully narcotic or anodyne; boiled in water, they impart to the menstruum their narcotic juice, together with the other juices which they have in common with vegetable matters in general. The liquor, strongly pressed out, suffered to settle, clarified with whites of eggs, and evaporated to a due consistence, yields an extract which is about one-fifth or one-sixth of the weight of the heads. This possesses the virtues of opium, but requires to be given in double its dose to answer the same intention, which it is said to perform without occasioning a nausea and giddiness, the usual effects of opium. This extract was first recommended by Mr. Arnot; and a similar one is now received in the Edinburgh Pharmacopœia. It is found very convenient to prepare the syrup from this extract, by dissolving one drachm in

two pounds and a half of simple syrup. The *syrupus papaveris albi*, as directed by both colleges, is a useful anodyne, and often succeeds in procuring sleep, where opium fails; it is more especially adapted to children. White poppy heads are also used externally in fomentations, either alone, or more frequently added to the decoction pro fomento.

2. *P. Cambricum*, the Welch poppy, has a perennial root, pinnated cut leaves, smooth, upright, multiflorous stalks, a foot and a half high; garnished with small pinnated leaves, and terminated by many large yellow flowers, succeeded by smooth capsules. It flowers in June.

3. *P. orientale*, the oriental poppy, has a large, thick, perennial root; long, pinnated, sawed leaves; upright, rough, uniflorous stalks, terminated by one deep red flower, succeeded by oval, smooth capsules. The flowers appear in May.

4. *P. rhoeas*, the wild globular-headed poppy, rises with an upright, hairy, multiflorous stalk, branching a foot and a half high; garnished with long, pinnatifid, deeply cut, hairy leaves; the stalk terminated by many red and other colored flowers in the varieties, succeeded by globular smooth capsules. This plant is common in corn fields, and flowers in June and July. It may be distinguished from the *papaver dubium*, to which it bears a general resemblance, by its urn-shaped capsules, and by the hairs upon the peduncles standing in a horizontal direction. The capsules of this species, like those of the *somniferum*, contain a milky juice, of a narcotic quality, but the quantity is very inconsiderable, and has not been applied to any medical purpose; but an extract prepared from them has been successfully employed as a sedative. The flowers have somewhat of the smell of opium, and a mucilaginous taste, accompanied with a slight degree of bitterness. A syrup of these flowers is directed in the London Pharmacopœia, which has been thought useful as an anodyne and pectoral, and is therefore prescribed in coughs and catarrhal affections; but it seems valued rather for the beauty of its color than for its virtues as a medicine. All the kinds are hardy, and will prosper any where. The first and last species, being annual, are to be propagated only by seeds; but the others by parting the roots as well as by seeds.

PAPAV'EROUS, *adj.* Lat. *papavereus*, from *papaver*, a poppy. Resembling poppies.

Mandrakes afford a *papavereous* and unpleasant odour, whether in the leaf or apple. *Broune.*

PAPAW', *n. s.* Fr. *papayer*; Hind. *pupuey*, low Lat. *papaya*. A plant.

The fair *papaw*,

Now but a seed, preventing Nature's law,

In half the circle of the hasty year,

Projects a shade, and lovely fruit does wear.

Waller.

PAPAW, in botany. See **CARICA**.

PAP-CASTLE, an ancient castle of England, in Bridekirk parish, Cumberland, which stood two miles from Cockermouth, on the other side of the Darwent, whose Roman antiquity is proved by several monuments; and a large green stone vessel found here, with little images upon it, is supposed to have been formerly a Danish font

for dipping of infants; and has been since used at Bridekirk in the neighbourhood for sprinkling. The name of Pap-castle seems to be contracted from Pippard its owner; it is said to have been demolished, and the materials employed to build Cockermouth Castle. Mr. Routh, in a letter to Mr. Gale, thus describes the ruins discovered at Pap-castle, January 16th, 1743. 'The close in which they lay is a little to the south of the fort, on the declivity of the hill to the river, and bounded on the west by a narrow lane, probably the *via militaris* continued; and is usually shown to strangers as the most remarkable here for finding Roman coins. They are the largest ruins ever known to be discovered in these parts; for they met with three walls, besides the pavement.' Mr. Routh, in another letter to Mr. Gale, April 13th, 1743, describes a fibula, a coin of Trajan found it. Dr. Stukely says, the Roman castrum lies on the top of the hill above the village, and he traced its whole circumference, a bit of the Roman wall by the river side going to Wigton, and there the ditch is plainly visible, though half filled up with the rubbish of the wall. Coins of Claudius, Adrian, and a silver Geta, *PONT. REV. PRINCEPS IVVENTVTIS*, were also found in it. He supposes its ancient name, *Derventio*, derived from the *Dervent*.

PAPER, *n. s., adj. & v. a.* } Fr. *papier*;
PAPER-MAKER, } Lat. *papyrus*. A
PAPER-MAKING, } well known sub-
PAPER-MILL. } stance used for
 writing and printing upon; a portion of paper;
 single sheet; deed; essay; account, or state-
 ment; used variously for what is contained on
 paper or on a sheet of paper: as an adjective,
 made of paper; hence slight or thin: to paper is,
 to register; commit to, line, or adorn with paper:
 for paper-maker, paper-making, and paper-mill,
 see below.

He makes up the file
 Of all the gentry: and his own letters
 Must fetch in him he papers.

Shakspeare. Henry VIII.

What see you in those papers, that you lose
 So much complexion? look ye how they change!
 Their cheeks are paper. *Id. Henry V.*

Thou hast caused printing to be used: and contrary to the king, and his dignity, thou hast built a paper-mill. *Shakspeare.*

Nothing is of more credit or request than a petulant paper, or scoffing verses. *Ben Jonson.*

He was so careless after bargains that he never received script of paper of any to whom he sent, nor bond of any for performance of covenants. *Fell.*

'Tis as impossible to draw regular characters on a trembling mind, as on a shaking paper. *Locke.*

There is but a thin paper wall between great discoveries and a perfect ignorance of them. *Barnet.*
 They brought a paper to me to be signed. *Dryden.*

Do the prints and papers lie?

Swift.

I was in hopes that in coming to Leicester you would have had intelligence of your papers. As this is not the case you ought immediately to advertise them, &c. *Warburton.*

Sir,—In a literary performance, by a juvenile author, I feared to find intermixed much of the common trash of periodical papers; stories of love adventures. *Canning.*

PAPER, INCOMBUSTIBLE. An incombustible paper is made of the lapis asbestos, or linum vivum, which will bear burning without being injured. Dr. Bruckman, professor at Brunswick, published a natural history of the asbestine, or incombustible paper; and printed four copies of his book thereon. Vide Bibl. Germ. tom. xiv. p. 190.

The manner of making this paper is described by Mr. Lloyd (Phil. Trans. No. 166, p. 824), from an essay made by himself. He pounded a quantity of the asbestos in a stone mortar, till it became a downy substance; then sifted it in a fine searce, and by this means purged it indifferently well of its terrene parts; because the earth or stones he could not pick out of it before, or at the pounding, being reduced to a powder, came through a searce, the linum remaining. This done, he brought it to the paper-mill: and, putting it in water, in a vessel just big enough to make a sheet with such a quantity, he stirred it pretty much, and desired the workmen to proceed with it in the usual method, with their writing-paper mould; only to stir it about always before they put their mould in; considering it as a far more ponderous substance than what they used; and that consequently, if not immediately taken up after it was agitated, it would subside. The paper made of it proved but coarse, and was very apt to tear; but this was the first trial, and the workmen did not doubt, but in case it were pounded in one of their mortars for twenty hours, it would make good writing-paper. See ASBESTOS.

PAPER-HANGINGS, in the arts, are of various kinds, and are used for the covering of ceilings, walls, stair-cases, &c., and represent stucco-work, velvet, damask, brocades, chintzes, or such silks and stuffs as are employed for hanging rooms: hence their name. The principal difference in the manufacture lies in the grounds. The common grounds are laid in water, and made by mixing whitening with the common glovers' size, and laying it on the paper with a proper brush in the most even manner. This is all that is required where the ground is to be left white; and the paper being then hung on a proper frame till it be dry is fit to be painted. When colored grounds are required, the same method must be pursued, and the ground of whitening first laid, except in pale colors, such as straw-colors or pink, where a second coating may sometimes be spared, by mixing some strong color with the whitening.

There are three methods by which paper-hangings are painted; the first, by printing on the colors; the second, by using the stencil; and the third, by laying them on with a pencil, as in other kinds of painting.

1. When the colors are laid on by *printing*, the impression is made by wooden prints, cut in such a manner that the figure to be expressed is made to project from the surface; and this being charged with the colors tempered with their proper vehicle, by letting it gently down on a block on which the color is previously spread, conveys it from thence to the ground of the paper on which it is made to fall by means of its weight, and the effort of the arm of the person

who uses the print. It is easy to conclude that there must be as many separate prints as there are colors to be printed. But, where there are more than one, great care must be taken after the first to let the print fall exactly in the same part of the paper as that which went before, otherwise the figure of the design would be brought into irregularity and confusion. In common paper of low price it is usual, therefore, to print only the outlines, and lay on the rest of the colors by stencilling, which both saves the expense of cutting more prints, and can be practised by common workmen, not requiring the great care and dexterity necessary to the using several prints.

In the finer paper, where several colors are laid on with the prints, the principal color is begun with: and the rest taken successively; the print for the outline being laid on last. In cases where the pencil is to be used, the outline is nevertheless to be made before the colors are laid on by the pencil, if such outline is to be made at all; because that is the guide to the persons who lay on the color; and confines them to a correctness. In paper printed with designs in chiaro-scuro, such as the imitation of stucco-work, and bas relievos, the order of printing must be, to lay on the ground color first; afterwards the shades; and lastly the lights; and the same rule of succession must be observed where the colors are pencilled.—*Handmaid to the Arts*, vol. ii. p. 445, &c.

2. The manner of *stencilling* the colors is this. The figure, which all the parts of any particular color make in the design to be painted, is to be cut out in a piece of thin leather or oil-cloth, which pieces of leather or oil-cloth are called stencils; and being flat on the sheets of paper to be printed, spread on a table or floor, are to be rubbed over with the color properly tempered by means of a large brush. The color passing over the whole is consequently spread on those parts of the paper where the cloth or leather is cut away, and gives the same effect as if laid on by a print. This nevertheless is only practicable in parts where there are only detached masses or spots of colors; for where there are small continued lines, or parts that run one into another, it is difficult to preserve the connexion or continuity of the parts of the cloth, or to keep the smaller corners close down to the paper; and, therefore, in such cases, prints are preferable. Stencilling is indeed a cheaper method of accomplishing the work than printing; but, without such extraordinary attention and trouble as render it equally difficult, it is far less beautiful and exact in the effect. For the outlines of the spots of color want that sharpness and regularity that are given by prints, besides the frequent extralinations or deviations from the just figure, which happen by the original misplacing of the stencils, or the shifting of the place of them during the operation.

3. *Pencilling* is only used in the case of nicer work, such as the better imitations of the Indian paper. It is performed in the same manner as other painting in water or yarnish. It is sometimes used only to fill the outlines already formed by printing, where the price of the color, or the exactness of the manner in which it is required to be laid on, render the stencilling or printing it

less proper; at other times it is used for forming or delineating some parts of the design, where a spirit of freedom and variety, not to be had in printed outlines, is desired to be had in the work.

The paper designed for receiving *flock* is first prepared with a varnish-ground with some proper color, or by that of the paper itself. It is frequently practised to print some mosaic or other small running figure in colors on the ground, before the flock be laid on; and it may be done with any pigment of the color desired, tempered with varnish, and laid on by a print cut correspondently to that end.

The method of laying on the flock is this. A wooden print being cut, as is above described, for laying on the color in such manner that the part of the design which is intended for the flock may project beyond the rest of the surface, the varnish is put on a block covered with the leather or oil-cloth, and the print is to be used also in the same manner, to lay the varnish on all the parts where the flock is to be fixed. The sheet thus prepared by the varnished impression is then to be removed to another block or table, and to be strewed over with flock, which is afterwards to be gently compressed by a board or some other flat body, to make the varnish take the better hold of it, and then the sheet is to be hung on a frame till the varnish be perfectly dry; at which time the superfluous flock is to be brushed

off by a soft camel's-hair brush; and the proper flock will be found to adhere in a very strong manner. The method of preparing the flock is by cutting woollen rags or pieces of cloth with the hand, by means of a large bill or chopping-knife, or by means of a machine worked by a horse-mill.

There is a kind of counterfeit flock-paper, which when well managed has very much the same effect to the eye as the real, though done with less expense. The manner of making this sort is, by laying a ground of varnish on the paper; and, having afterwards printed the design of the flock in varnish, in the same manner as for the true, instead of the flock some pigment or dry color of the same hue with the flock required by the design, but somewhat of a darker shade, being well powdered, is strewed on the printed varnish, and produces nearly the same appearance.

Paper-hangings are sometimes spangled with that kind of talc called isinglass, which, being reduced to a gross flaky powder, has a great resemblance to thin silver scales or powder. It is laid on by strewing over the varnish, which forms the ground, before it begins to dry. When it is laid on in a figure, for the representation of embroidery, the figure must be printed in varnish, and the talc strewed upon it, and treated like flock. Smalt may also be used in the same manner as flock or spangles.

PAPER-MAKING.

PAPER-MAKING. The origin of this most useful art, like that of printing, to which it has proved so important an auxiliary, is involved in obscurity. The *ancients*, we are perhaps too ready to suppose, had comparatively little occasion for paper; important MSS. have always been committed to more durable substances; civilisation must become permanent in a country before the frequent interchange of mind by writing is extensively practised, particularly on subjects of temporary importance; and it is in the temporary writings, and the books of the *existing* generation, rather than those which are handed down to posterity, that the great consumption of paper takes place. Yet, in the annals of that country in which we find the earliest traces of the arts, we read much of paper; which, according to Varro, was first made at Alexandria, in Egypt, from the rush papyrus. Pliny describes its root as of the thickness of a man's arm, and ten cubits long; from this arise a great number of triangular stalks, six or seven cubits high, each thick enough to be easily spanned; its leaves are long like those of the bull-rush; its flowers staminate, ranged in clusters at the extremities of the stalks; its roots woody and knotty like those of rushes; and its taste and smell akin to those of the cyperus, under which genus Linnæus has classed the papyrus. See **PAPYRUS**. Various other useful articles were made of this rush, as blankets, mats, garments, and shoes; sails, ropes, and other naval rigging. Moses, according to the Septuagint, was exposed on the Nile, ἐν θυβίᾳ πapyrus, in a basket of this material.

• In the Roman writers we find various kinds of Egyptian paper described, as, i. Those denominated from the purposes to which they were applied. Such were (1.) The *hieratica*, the most ancient kind, and appropriated to religious services: this was afterwards called *Augusta*, after the emperor of that name, and sometimes *Lavinia*, in compliment to his wife, who is said to have suggested improvements in bleaching it. This paper seems to have been made of about eleven inches in breadth. (2.) The *emporica*, or *emporetica*, a small and coarse paper used by shopkeepers: we perhaps should rank here (3.) The *amphitheatrica*, from its being used or made in the amphitheatre; but it appears, according to Guilandinus, to have been known long before any building of this kind was erected; and he names it *Arthribitica*, from Arthribus a city of the Delta.—ii. Various papers were called after the place in which they were manufactured, as, (1.) The *Saitica*, from the city Sais; (2.) The *Teniotica*, or *Taitica*, from a place now unknown. Most of the inland towns and cities of Egypt are said to have had manufactories of this kind: and Vopiscus states that the tyrant Firmus, who rebelled in Egypt, declared he would maintain an army only with paper and glue, 'papyro et glutine,' which Casaubon understands as spoken of the produce and revenue of paper. iii. Other papers were called, as in modern times, after the names of celebrated makers: as, (1.) The *Fanniana*, from Rhem. Fannius Palamon, the grammarian, who owned a paper manufactory. This kind was small, but finer than the amphitheatrical paper; and at one time was first

wrought at Alexandria, and finished at Rome. (2.) *Claudia*, first made by order of the emperor Claudius, and reputed the best of all the kinds made in his time.

The general mode of manufacturing the papyrus was to begin by lopping off the head and root of the plant; the remaining stem was then slit lengthwise into two equal parts, and from each of these they stripped the thin scaly coats or pellicles, of which it was composed, with a needle or the point of a knife. The innermost of those pellicles were looked on as the best, and those nearest the rind or bark the worst; they were kept apart accordingly, for different and inferior sorts of paper. Pliny calls these pellicles by the twelve different names of *philura*, *ramentum*, *scheda*, *cutis*, *plagula*, *corium*, *tænia*, *subtegmen*, *flatumen*, *pagina*, *tabula*, and *papyrus*.

The pellicles being thus detached, and, according to the count de Caylus, dried in the sun, were stretched on a table, and two or more laid over each other transversely, so as that their fibres crossed in right angles. The Claudian paper, named above, consisted of three of these pellicles or layers. They were then glued together with the slime of the Nile, or a flour paste; afterwards pressed to get rid of the water; and flatted and smoothed by being beaten with mallets. Sometimes a polish was added by means of a hemisphere of glass, ivory, or bone. The Romans seem to have used a size or gum, whereby they could enlarge or diminish the final volume of the paper, and they excelled in the bleaching and polishing of it.

Varro, who in common with many writers assigns the origin of the manufacture of papyrus to Alexandria, seems to have overlooked several important facts which prove it to have been known to the Greeks before the conquest of Egypt by Alexander. Thus Anacreon Alcæus, Plato the comedian, Aristomenus, Plato the philosopher, Aristotle, and Æschylus, used the terms *βαβλος* and *βαβλιον*: and Herodotus, Homer, and Hesiod, expressly mention the papyrus. Pliny cites a passage from an ancient Roman annalist which speaks of paper books found in king Numa's tomb, who was buried above three centuries before Alexander. At the period of Alexander's conquests it seems, however, to have become far more generally known; and, so late as two centuries after, we find stems and barks of trees frequently used for writing upon through the scarcity of paper. In the reign of Tiberius there was such a scarcity of this article that its use in contracts was dispensed with by public authority. In about the twelfth century its manufacture seems to have been entirely discontinued.

Montfaucon and others speak of an ancient Egyptian bark paper, which they distinguish from that made of the papyrus as thicker and more brittle, as well as more apt to part asunder, so that in some instances the bottom layer has been found to remain, and that on which the writing was made has peeled off. Matthei, however, thinks little of this distinction, and contends that the only use of the *tilia* or linden was for making the boards or tablets used for diptycha or pocket-books; and sometimes to be

written on, on both sides, which the ordinary Egyptian paper would not bear.

A paper made of cotton seems to have been working its way into Europe from the east as early as the tenth century. There are MSS. written on it in fact of this date in the French king's library: and in the twelfth century cotton MSS. became more frequent than those on skins. This paper is that called *charta bombyca*.

Some anomalous kinds of ancient paper may be here alluded to, and close this part of our sketch. According to the *Memoirs de Trev.* (Sept. 1711), there are two papal bulls of the dates 891 and 895 (issued by the Anti-popes, Romanus, and Formosus), which are written on an unknown material of this description, two ells long and one broad: they consist of two leaves or pellicles glued together transversely, and are still legible in most places. The conjectures of the French literati in regard to them are very various. Some consider them to be made of the leaves of the alga, or sea-wreck; others of the leaves of a rush, called la boga, found in the marshes of Rousillon; others of papyrus; others of bark; and others of cotton. There is also a MS. of this description in the abbey of St. Germain.

The oriental and other papers made direct from vegetable substances, seem next to require our attention: though all the published details of the mode of manufacturing them are vague and unsatisfactory. There are many palm trees of India and America to which botanists have given the name papyraceous, because the natives have written with bodkins either on the leaves or the bark. Such is the American palm, called tal by the Indians; and the guajaraba of New Spain. Every palm the bark of which is smooth, and the leaves large and thick, may be used for this purpose.

But the art of making paper from vegetables reduced to stuff was known in China long before it was practised in Europe; and the Chinese have carried it to a degree of perfection hitherto unparalleled in the western world.

Every province of their empire has its peculiar paper. That of Se-tchuen is made of hemp or of linen rags, as in Europe; that of Fo-kien of the bamboo; that of the northern provinces, of the interior bark of the mulberry; that of the province of Kiang-nan of the skin found in the webs of the silk-worm; other provinces use the cotton plant extensively, others the bark of the elm, and wheat or rice straw; finally, in the province of Hu-quang, the tre-chiu, or ko-chu, furnishes the materials with which they make paper.

The method of fabricating paper with the bark of different trees is nearly the same with that which is followed in the bamboo, of which alone we shall speak. The second skin of the bamboo generally, but sometimes the whole substance, is reduced to pulp by steeping, boiling, and the mortar, and then beat together with the glutinous juice of a plant named ko-teng, till it becomes a thick and viscous liquor. The workmen plunge their forms into this liquor; take out what is sufficient for a sheet of paper, which immediately becomes firm and shining, and is detached from

the form by turning down the sheet on the heap of paper already made, without the interposition of pieces of woollen cloth, as in Europe. The Chinese paper must be dipped in a solution of alum before it can take either ink or colors.

In Japan they manufacture paper from the bark of trees of a prodigious strength. There is a kind of it fit for bed-hangings and wearing apparel; resembling so much stuffs of wool and silk, that it is often taken for them. The following is Kempfer's catalogue of trees used in Japan for the manufactory of paper:—1. The true paper-tree, called in the Japanese language *kaadsi*, Kempfer characterises thus: *papyrus fructu mori celsæ, sive morus sativa foliis urticæ mortuæ cortice papifero*. 2. The false paper-tree, called by the Japanese *katsi kadsire*; by Kempfer *papyrus procumbens lactescens, folio longo, lanceata cortice chartaceo*. 3. The plant which the Japanese call *oreni* is named by Kempfer *alva radice viscosa, flore ephemero magno puniceo*. 4. The fourth tree used for paper is the *futo-kadsura*, named by Kempfer *frutex viscosus procumbens folio telephii vulgaris æmulo fructu racemoso*.

When the bark they use has been cleansed and sorted, they boil it in clear lie; keeping it from the time it begins to boil perpetually stirred with a strong reed, and pouring from time to time so much fresh lie in as is necessary to condense the evaporation, and to supply what has been lost by it; this boiling is continued till the matter is so tender that being but slightly touched with the finger it will dissolve and separate into fibres. The lie is made of wood ashes, in the following manner: two pieces of wood are laid across over a tub and covered with straw, on which they lay wet ashes, and then pour boiling water upon it, which, as it runs through the straw into the tub underneath, is imbued with the saline particles of the ashes.

After boiling follows the washing of the bark, which is generally performed in a river, and requires great judgment and attention. The bark is put into a sort of sieve, which will let the water run through, and stirred continually till it comes to be diluted into a delicate pulp. For the finer sort of paper the washing is repeated, and the bark put into a piece of linen, instead of a sieve, as the particles become very fine; and the harder pieces or knots are now picked out. Now the bark is put upon a thick, smooth, wooden table, in order to its being beaten with sticks of the *kusnoki* wood, which is commonly done by two or three people, until it is so thin as to resemble a pulp of soaked paper; and, being thus prepared, it is put into a narrow tub, with the fat slimy infusion of rice, and the infusion of the *oreni* root, which likewise is very slimy and mucilaginous. These ingredients being put together are stirred with a thin clean reed, till they are thoroughly mixed and wrought into a uniform liquid substance, of good consistence, and out of this tub the leaves are taken off one by one, on proper patterns made of bulrushes. These to dry them are laid up in heaps, upon a table covered with a double mat, and a small piece of reed is put between every leaf,

which serves, in time, to lift them up and take them off singly.

At the beginning of the summer, when the *oreni* root is scarce, the paper-makers make use of a creeping shrub called *sane kadsura*, the leaves of which yield a mucilage in great plenty, though not altogether so good for this purpose. They also use the *juncus sativus*, which is cultivated in Japan with great care.

The Siamese make a paper of the bark of the *pleok-kloi* tree, of which they have a black and a white kind: it is folded up in books, in the manner of fans, and will bear to be written on on both sides with a stylus which they make of clay.

The Cingalese also, according to Dr. Davy, write very neatly and expeditiously with a sharp-pointed style on the immense leaf of the *talipot*-palm: coloring 'their characters, when scratched by an ink made of lamp-black and gum.' Their numerous books are all formed of these leaves, cut into suitable pieces, and confined by boards: 'occasionally, but rarely,' he adds, 'these books are made of thin copper-plates.' All the nations on the other side of the Ganges seem to make use of the bark of trees and shrubs for these purposes; the other Asiatic nations on this side the Ganges, the black inhabitants of the most southern parts of India excepted, make their paper of old cotton rags and stuff, and their method differs little from ours in Europe, except that it is more simple, and the instruments less refined. Yet it is very remarkable that what is called *India* paper (used in taking off our finest copper-plate impressions) cannot be manufactured in England.

We come now to the *modern art of paper-making* in Europe; or the important and admirable process by which our worn-out clothes and linen are converted into an economical but most efficient, convenient, and often elegant substance, to receive the labors of the pen and the operations of the press. Who first suggested this appropriation of linen rags it seems at this period hopeless to attempt to discover; certainly he bestowed on mankind a service barely exceeded by that of the invention of printing. Various dates have been assigned for its origin. Ray and Milnes (in his *Hortus Philosophicus*) date it about the year 1470, when it first appeared in this part of the world, says the former, at Guernsey; two persons, named Anthony and Michael, having brought it to Basil, from Galicia in Spain. It would seem most probable indeed that, like much of our other knowledge, this travelled from the east, soon after the taking of Constantinople. Rabelais, who died in 1553, mentions hempen cloth as having been known about 100 years before his time: yet Mabellon and others find paper MSS. dated, they say, so far back as the middle of the fourteenth century; and Dr. Priedeaux affirms that he has seen a registration of some acts of John Cranden, prior of Ely, made on paper, which bears date in the fourteenth year of Edward II., i. e. Anno Domini 1320. He however considers that this manufacture was brought to us from the east, through the Saracenic conquests in Spain.

PAPER MAKING.

Revised, 1846.

Fig. 2.

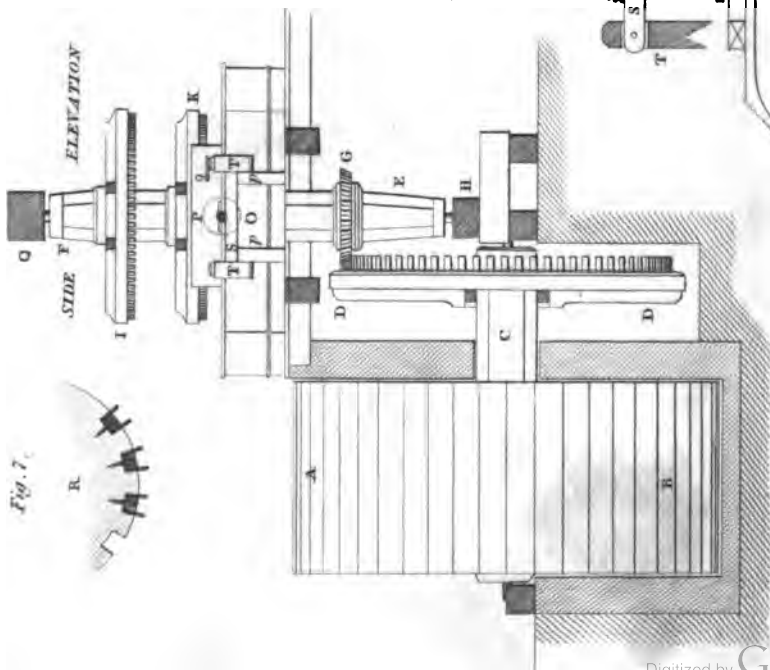


Fig. 7.



Fig. 1.

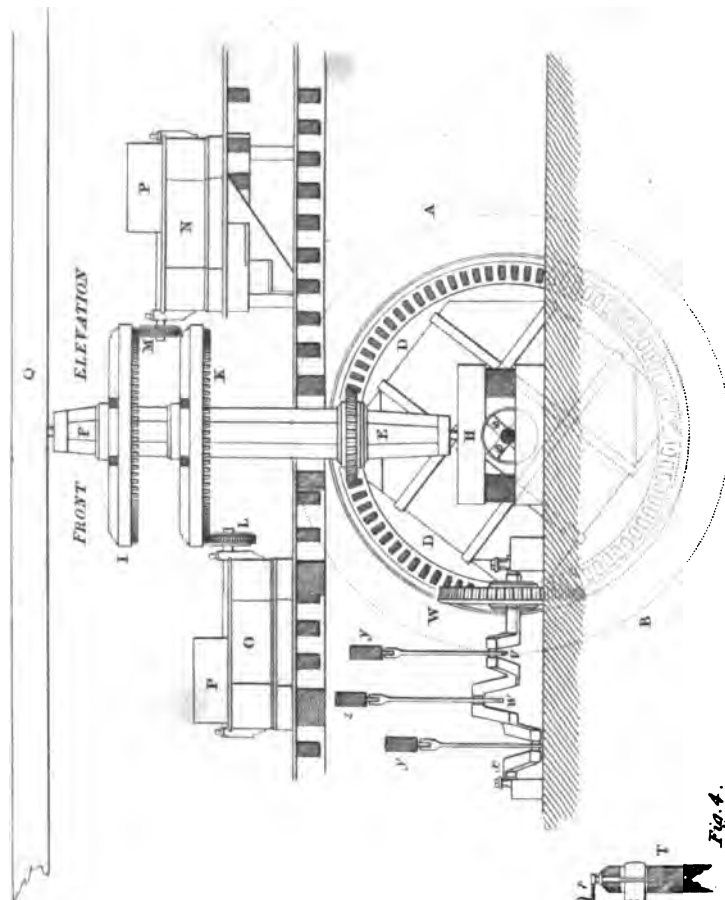


Fig. 6.

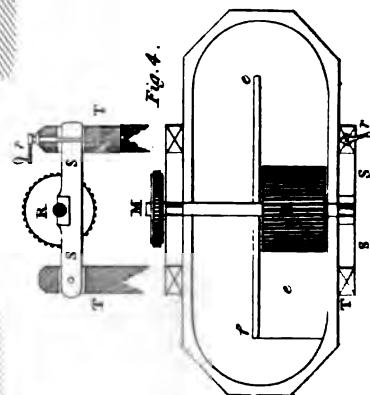


Fig. 4.

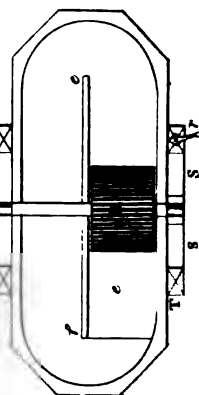


Fig. 3.

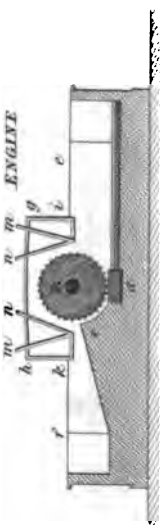


Fig. 8.



In our own times we have seen, in the invention of the new machinery applied to paper-making, the most important addition that has been made to the art; and such an one as nearly equals in importance the original suggestion of making it from rags. At such a period we must indulge a smile at the standing definition of 'linen, or European paper' in the most extensive of our modern Encyclopedias, as 'chiefly made of linen rags beaten to a pulp with *great hammers*, and the soil carried off by a continual supply of fresh water, conveyed among the pulp in little troughs, till it be rendered perfectly white.' The fact is hammers have been entirely discontinued in this country for these forty years, and long before the invention of the machine.

The modern process may be considered as divided into paper-making as conducted by the hand—and by the machine: the greater part of the best writing and printing papers taken together being, perhaps, at length made by the latter; for so strong is the attachment to particular names, with regard to writing papers, that though an article every way as perfect and beautiful can be manufactured by the machine, an equal quantity at least of that paper separately considered is made by the old method.

I. OF PAPER-MAKING BY THE HAND.—Even this, as conducted in the more respectable establishments, will not fail to strike an intelligent stranger to the process as a surprisingly simple and beautiful art. He may be first led into the *rag-house*, where a number of women and children will be found employed in cutting and sorting the washed rags.

Rags are sold to the paper-makers sorted into four or five different kinds: No. 1, sometimes called London superfine, being all linen, and reserved for the finest paper. No. 5 is generally the coarsest sort, and includes canvas; a sixth sort called 'rag-bagging' is, however, sometimes kept separate. 'Colored rags' include cotton of all colors except blue, which is kept apart for making blue paper.

Some mills use a duster, made of wire net, in the form of a cylinder, four feet in diameter and five feet long. It is put in motion on pivots in connexion with some part of the general machinery, and enclosed in a tight box, into which it casts off the dust. In different establishments very different degrees of care are exercised in the sorting: some separate cloth of hemp from cloth of flax; others keep hems and seams apart; and think that the coarseness of the cloth should be considered, and the degree of wear it has had attended to; for, if rags which are almost new be mixed with those that are much worn, the one will not be reduced to a pulp in the mill, whilst the other will be so attenuated as to be carried away by the water, to the real loss of the manufacturer, and the deterioration of the article made; or the particles carried off will be those which would give it a smooth and velvet-like softness. Nor is this all: a pulp of uneven tenuity produces those cloudy papers in which are seen at intervals parts more or less clear, and more or less weak, occasioned by the flakes assembled on the mould not being sufficiently tempered and diluted together.

The general furniture of the rag-house is a number of chests or boxes divided into five or more separate cases for the different sorts of rags; and in some cases having a large knife fixed on the top: each woman has a piece of paste-board hung from her girdle and extended on her knees, upon which, with the assistance of the knife, she unrips seams and stitches, and scrapes off all filth. Whatever can be used, after being well shaken, is distributed according to the degree of fineness, and the women throw the rest at their feet. The more exact manufacturers have six cases, i. e. for the superfine, the fine, the seams and stitches of the fine; the middling, the seams and stitches of the middling; and the coarse; without including the very coarse parts, reserved for brown and other coarse papers.

Sometimes the rags are bleached in the first stage of the process, or immediately after they are sorted, and Mr. Campbell took out a patent for a method of performing this in 1792. It is similar to the process of bleaching cotton thread. He directs that the rags should, before they are put into the receiver to be bleached, contain not more than their own weight of fair water. They should first be opened by a machine, called by the cotton manufacturers a devil, or some machine of that nature, and they are to be distributed in the receivers, in layers spread on frames, so that they will not come in contact with each other, or they may be placed in the body of the receiver, and have stirrers or agitators, provided to expose every part of them to the action of the bleaching gas. After the process, which must be concluded as soon as ever the rags are sufficiently bleached, lest the gas should act upon and injure their quality, they are to be washed in water, and will be ready for the mill.

Many manufacturers and printers consider that this mode of bleaching the rags makes them rotten; that it injures the quality of the paper, which it doubtless does if carried too far; and that it enables makers to pass off an article of inferior staple. This is no doubt the case in some instances; but, with all the just suspicion of bleached papers that obtains in many quarters, bleaching may clearly be delicately and judiciously applied; though whether in this stage or in the state of *half-stuff* we will not here decide; and it is certainly capable of making the same good materials into a better paper, when well managed. In many mills printing papers are bleached by muriate of lime inserted in the washing engine.

We may now describe the *paper-mill* in its principal parts. This is represented in the plates, PAPER-MAKING I. and II., through which, for the convenience of arrangement, the figures run on. Fig. 1 is a front, and fig. 2 a side elevation of the mill; the same letter expressing the same part in both. A B is the great water-wheel, giving motion to the whole on its shaft or axis C; a crown, or face wheel, D D is framed, and gives motion to the pinion G; this is fixed on the lower part of a vertical axis E E, which goes up into the upper room of the mill, and has two face wheels I and K fixed upon it; these actuate two pinions L M, upon

the end of the spindles of the two engines N and O, where the rags are ground.

W, fig. 1, is a wheel turned by the teeth of the great wheel DD; the axis of this wheel is formed into a triple crank *v, w, x*, which gives motion to two or three pumps, by means of levers or beams *y, z, y*, which cannot be fully seen in the figures, but may be easily imagined. These pumps raise up a constant stream of clean water, which is necessary to be kept running through the rags in the engine to wash away the dirt separated from them in the process. By the arrangement of the cog wheels, the pinions LM and cylinders of the engines are caused to revolve at the rate of 150 times per minute, when the water wheel moves with its proper velocity.

The internal construction of the engine is explained by the remaining figures. Fig. 3 is a longitudinal section, showing the cylinder in action; Fig. 4, a plan looking down upon it; fig. 6, the cylinder separate; N and O, in fig. 1. represent a large cistern or vat of an oblong figure, with the angles removed, as shown by fig. 4; it is lined with lead inside, and divided in the middle by a partition *ef*, figs. 3 and 4. On the front and back of the engine two short beams TT, figs. 2, 4, and 5, are bolted; they have long mortises through them to receive tenons at the ends of two horizontal levers SS, which rise and fall in bolts in one of the beams T as centres; the front one of these beams, or that nearest to the cylinder R, is capable of being elevated or depressed by turning the nut of the screw *r*, which, as shown in fig. 5, is fixed to the tenon of S, and comes up through the top of the beam T, upon which the nut takes its bearing. Two brasses are let into the middle of the levers S, S, and form the bearing for the spindle of the engine to turn upon. R is the cylinder made of wood and fixed fast upon the spindle; it has a number of knives or cutters fixed upon it, parallel to its axis, and projecting from its circumference about an inch; *e*, fig. 3 and 4, is a circular breasting, made of boards and covered with sheet lead, which fits the cylinder very truly, and leaves but very little space between the teeth and breasting. An inclined plane leads regularly from the bottom of the engine trough to the top of the breasting, at the bottom of the breasting beneath. The axis of the cylinder, a block *a*, fig. 3, is fixed, and has cutters of the same size and exactly similar to those in the cylinder, which at all times of the process pass very close to the teeth in the block, but do not touch. This block is fastened by a dove-tail fixed in the wooden bottom of the breasting; it comes through the woodwork of the chest, and projects a small distance on the outside of it, and is kept up to its place by a wedge, so that by withdrawing this wedge the block becomes loose, and can be removed to sharpen the cutters as occasion requires. The great velocity of the cylinder draws the rags, with which the engine trough is filled between the cylinder and the cutters in the block *a*, and by this they are cut in pieces; then by the rapid motion of the cylinder the rags are thrown over the top of the breasting, and they run down the

inclined plane, and passing round the partition *ef* come to the cylinder again, so as to be repeatedly cut till they are reduced to a pulp. This circulation or turning the rags over in the engine, causes them to present themselves to the cutters in a different direction every time; for as the cylinder cuts or clips in straight lines, in the same manner as a pair of shears, it is requisite to cut the rags across in different directions, to reduce them to a pulp. The screw *r* is used to raise or lower the cylinder, and cause it to cut finer or coarser by enlarging or diminishing the space between the cutters in the block and those of the cylinder. These cutters act in the same manner as a pair of scissors cut, the teeth of the cylinder being as before-mentioned parallel to the axis of the cylinder, and those of the block are placed rather inclined to them, so that the teeth of the cylinder come first in contact with the cutters of the block at one end, and then successively the contact proceeds along to the other end, so that any rags interposed between them are cut in the same manner as they would be between the blades of a pair of shears. Sometimes the plates or cutters in the block are bent to an angle in the middle instead of being straight and inclined to the cylinder; in this case they are called elbow plates, and of course the two ends are both inclined to the axis of the cylinder in an opposite direction; in either case the edges of the plates of the block cannot be straight lines, but must be curved to adapt themselves to the curve which an inclined line traced on the cylinder will of course have. The plates of the block are united by screwing them altogether, and their edges are bevelled away on one side only.

The cutters of the cylinder are fixed in, as shown in fig. 7; here R is the cylinder, formed of a solid piece of wood, and having grooves cut on its circumference parallel to its axis; each of these grooves has two cutters put into it, and a fillet of wood is driven fast in between them to hold them in; the fillets are kept in by spikes driven into the solid wood of the cylinder. A cover is put over the cylinder to prevent the water or rags being thrown out of the engine by its great velocity; it is a square box, *ghki*, fig. 3, and marked P, figs. 1 and 2; it has two small troughs, *k* and *i*, coming through the sides of the box; at *mm* are two hair or wire sieves sliding in grooves made in each side of the box. The cylinder as it turns throws a great quantity of water and rags up against these sieves; the water goes through them and runs down into the troughs at *k* and *i*, and thence into the ends of the leaden pipes *pp*, fig. 2, by which it is conveyed away; *n, n*, fig. 3, are grooves for two boards, which when down in their places cover the hair sieves and stop the water from going through them. A considerable part of the rags thus thrown up by the cylinder passes quite through it, and goes down under it again. The water is brought to the engine by a pipe from the pump; this pipe delivers it into a small cistern adjoining and communicating with the engine; the pipe has a cock to stop the entrance of the water when required; the exit of the foul water is, as before-mentioned, made by the cylinder throw-

ing it up into the troughs *i* and *k*. The two engines *N* and *O* are placed at different levels as shown by fig. 1, the bottom of *N* being higher than the top of *O*; the latter is called the washer, where the rags are first worked coarsely with water running through them, to wash and open the fibres of them, which after washing are called *half-stuff*; and are then let down into the beaten engine *O*; here they are ground and reduced to a finished pump, or *prepared stuff*, as it is called.

For making superfine paper, the following has been given as the established system of manufacture for the London market: 1 cwt. of the best white rags, called No. 1, is put into the washing engine, and the cock opened to let a considerable stream of water run through it. The screw of the cylinder is adjusted to raise it up, so that its teeth do not actually touch the teeth of the block: the rags are not therefore cut, but rather rubbed in a violent manner, so as to open and expose every fibre to the action of the water, that it may carry off all dirt; this gentle washing continues for a quarter of an hour or twenty minutes, when the cylinder is laid down, that is, the screw is turned back till the cylinder is let down upon the cutters of the block, and rests its weight upon them; in this state they begin with a tremendous noise and vibration to cut the rags into pieces; this is continued for about four hours, by which time the engine will come to work very steadily and with less noise, because the rags are cut into pieces and chopped up very much, though not yet reduced to a pulp.

The bleaching now commences, if it has not been done in the first stage upon the rags. To bleach the stuff in the engine they stop the water from running in, and throw in a quantity of bleaching salt, or muriate of lime; for fine rags, one or two pounds, more or less, are used according to circumstances; the two sliders, *n*, *n*, fig. 3, are put down in the cover of the cylinder to prevent the water getting away, and in this state the engine is worked about an hour for the bleaching. During this time the rags lose their color, but this does not color the water, though it is rendered rather white and milky by the salt. The very best rags, when first put into the engine, are of a yellow and dirty color, but they become by the bleaching a very perfect snow white. The cylinder is usually raised up a very little during the bleaching; which being concluded, the water-cock is opened again, the boards *n*, *n*, removed, and the washing continued about an hour to wash the salt away. This concludes the operation, and the *half-stuff*, as the rags are now called, is let off into a basket which suffers the water to drain through it: or if the manufacture is proceeding with despatch, and every thing is ready, it is let off into the beating engine at once; here the stuff is worked for about five hours with a sufficient quantity of water to make a pulp; in this affair great judgment is required, as it materially influences the quality of the paper; the water is not suffered to run through the beater, as in the other engine. The only difference between the two engines is the firmness of their teeth. The cylinder of the washer has twenty grooves in it, each containing two

bars or teeth, as shown in fig. 7, but the beater has three in each, so as to have sixty teeth in all. The beater is made to turn with a greater velocity than the other; the pinion *L*, fig. 1, which turns the beater, having only twenty teeth, while the other, *M*, has twenty-two. This greater velocity and number of teeth in the beater cause the strokes of the several knives passing by each other to be so rapid that they produce a coarse musical note or humming, which may be heard to a great distance from the mill; but the washer, being coarser and less rapid, produces the most horrible growling that can be conceived, and is so violent as to shake the whole building. In small mills, and where perhaps there is a deficiency of water, they only use one engine both for washing and beating, as it will do for either purpose; but the mills near London, chiefly at Maidstone, in Kent, have two, three, or even five engines. These require an immense body of water to turn them, and the steam engine has been, of course, very successfully applied in some mills. The stuff when finished is conveyed to a general receptacle called the stuff-chest, where it is kept till wanted to be made into paper; for the engines work day and night, though the making the paper, as it requires many workmen, is of course only carried on in the daytime.

The implements employed in this department of the manufacture are as follows: the vat with its stirrer, sometimes called a *hog*, the moulds and deckles, the felts, the vat press, another similar press to it for giving the paper a second pressure, &c.

The *vat* is made of wood in the form of a tub, and generally about five feet in diameter and two and a half in depth. It is kept at a proper temperature by means of a grate introduced at a hole in the side, and surrounded on the inside of the vat with a case of copper. For fuel to this grate charcoal or wood is used, and frequently to prevent smoke the wall of the building comes in contact with one part of the vat, so that the fire has no communication with the place where the paper is made. Every vat is furnished on the upper part with planks, enclosed inwards, and even railed in with wood to prevent any of the stuff from running over in the operation. Across the vat is a plank pierced with holes at one of the extremities, and resting on the planks which surround the vats. This is used to rest the mould upon when a sheet of paper has been made. In different mills two methods are made use of to mix up the stuff and water with which the vat is filled, and keep it in such an agitation as will prevent any coagulation or subsidence of the pulp, which would render the paper flaky and the different sheets of unequal thickness; in one, two instruments are employed to mix them, one of which is a simple pole, and the other a pole armed with a piece of board, rounded and full of holes. The operation of stirring is repeated as often as the stuff falls to the bottom. In the principal paper mills for making writing paper, they use for this purpose what is called a *hog*; which is a machine within the vat, that by means of a small wheel on the outside is made to turn constantly round, and keep the stuff in

perpetual motion. When the stuff and water are properly mixed it is easy to perceive whether the previous operations have been complete; for, if the stuff floats close and in regular flakes, it is a proof that it has been well worked in the engine.

The *mould* is a square frame or box made of well seasoned mahogany, and covered at the top with wire. In the old way the wires were disposed in parallel rows, with others across to strengthen them; this may be readily understood from the examination of a sheet of paper. But the modern paper is chiefly made on wool wire, which is exactly like cloth. The wire cloth is made larger than the intended sheet of paper, and turned down over the sides of the frame; the size of the sheet is determined by a square frame of mahogany bound with brass; this, which is called the *deckle*, when placed upon the wire of the mould, forms a shallow dish or mould, in which a quantity of the pulp is taken up, and by the draining through of the water the pulp is left in a sheet upon the wire, therefore this frame is necessary to retain the stuff of which the paper is made on the cloth; it must be exactly adapted to the wire cloth of the mould, otherwise the edges of the paper will be ragged and badly finished. The wire cloth of the form is varied in proportion to the fineness of the paper and the nature of the stuff. The deckle is moveable, and only held upon the mould by the workmen grasping the mould and deckle together in both hands at the opposite sides, so that the deckle being removed the sheet of paper may be taken up from the wire by applying the mould upon a piece of felt; it is then pressed with a felt between each sheet.

The *felts* are pieces of woollen cloth spread over every sheet of paper, and upon which the sheets are laid to detach them from the wire of the mould; they prevent them from adhering together and imbibe part of the water with which the stuff is charged, and transmit the whole of it when placed under the action of the press. The two sides of the felt are differently raised, that to which the hair is longest is applied to the sheets which are laid down, and any alteration of this disposition would produce a change in the texture of the paper. The stuff of which felts are made should be sufficiently strong, in order that it may be stretched exactly on the sheets without falling into folds, and at the same time sufficiently pliant to yield in any direction without injury to the wet paper. As the felts have to resist the reiterated efforts of the press, it appears necessary that the warp be made strong of combed wool and well twisted. On the other hand, as they have to imbibe a certain quantity of water and to retain it, it is necessary that the wool be of carded wool, and drawn out into a slack thread. These are the utensils together with the presses which are used in the apartments where the sheets of paper are formed.

Three principal workmen are employed in the operation of making the paper, which they manage thus: the first, called the *dipper*, stands in a nitch or hollow part of that kind of ledge or table which goes round the circumference of the vat; he holds a mould in both hands by the two

extremities with the deckle, applied exactly over the mould as if only one piece; then inclining it a little towards him he dips it into the vat and brings it up again in a horizontal position. The superfluous part of the pulp flows over on all sides, and the quantity thought sufficient is shaken gently from the right to the left, and up and down horizontally until it is equally extended over the whole surface of the mould. These two motions are also accompanied by a slight shake, that serves to fix and stop the sheet as the water drains through the wire; and then, the parts of the pulp uniting, the mould is immediately laid on the edge of the vat, the deckle taken off, and the mould made to slide along the board which is laid across the vat to the part where the sheet is to be laid or taken off. This board, which is but two inches in breadth where the sheet is laid, is nothing more than a deal board, which runs along the length of the vat, and is pierced with several holes at the broad extremity for letting the mould drain into the vat. The dipper, now taking the deckle off the first mould, places it immediately on the second which is given him for dipping it immediately in its turn, and the second workman, called the *coucher*, taking the mould on the board that runs across the vat, with the left hand raises it gently and lays it in an inclined position against one or two small pins which are driven into the board on the edge of the vat. In this condition the mould remains two or three seconds of time for draining into the vat, whilst the coucher extends a felt on which he applies the mould to take off the sheet, which being done he returns the mould to the dipper. These operations are performed in so short a time, that seven or eight sheets of a middling size can be made in a minute; but it is advisable to proceed more slowly, as the paper is thus better made, and of a stronger consistence.

The dipper is attentive in distributing the matter on the mould to reinforce the corner he is to take hold of, in raising and extending the sheets; for without this precaution he would break a great many. If he also take up too much matter with his mould, if he do not equally extend it, or if he strike his mould against the drainer, in all these cases, the matter is accumulated in certain parts of the mould, which produces something like ridges in the paper; or if he let the matter rest on the mould, and do not distribute it immediately, there will be parts of unequal thickness. When the vat is too hot, the stretching out of the sheet will be ill performed, because the water evaporates too soon over the mould. Add to this, that, in letting the matter run towards one of the edges, by not giving his arm a regular motion, he may form a feather-edged paper, which may likewise happen if he do not extend his stuff sufficiently; if the vat be too hot; if the fecula of the pulp be too crude, and do not run well; if his arms be too stiff, and if he give an irregular shake, or if the mould be ill made. An indented sheet is made by not taking off the deckle properly, or by the felts having stitches, seams, and selvages in them. In examining a sheet of paper, before the light, a greater opacity

is sometimes seen on both sides of each brass wire than towards the midst of the space. This is occasioned by the pulp, which the motion of the mould could not distribute, being stopped by the wires, or the manicoord, that serves to string them; a defect, however, almost wholly remedied by the improvement of weaving the wire of the mould like cloth. In order to avoid drops of water, which, if they fall upon the paper will make disagreeable spots, the mould is to be laid gently, and raised readily; and, as often as the coucher returns his mould to the drainer, he ought to be careful to shake his hands behind him, for, without this precaution, his fingers, which are wet, would drip upon the sheet already laid, whilst he is covering it with the felt. If he is also too quick in laying, the air, detained and compressed under the sheet, occasions a blemish.

The *coucher*, having taken off the several sheets from the mould as fast as they are made, lays them one by one in a pile under the press, with the felt between each individual sheet, until they have in this manner made six quires of paper, called a *post*, and containing 144 sheets. When the last sheet of the post is covered with the last felt, the workmen about the vat assist each other to submit the whole heap to the action of the press. They begin, at first, to press it with a middling lever, and afterwards with a lever fifteen feet in length; this operation expresses the water, and thus gives the paper a strength which it did not possess before. The vestiges of the protuberances made by the wires of the mould are altogether flattened, and, of consequence, the hollows opposite to them disappear also; but the traces formed by the interstices of the wire, in consequence of their thickness, appear on both sides, and are rounded by the press.

The business of the third workman, called the *lifter*, begins after the operation of the press, and consists in taking the sheets off the felts (for they are caused to adhere to them by the action of the press), and making them up in a second neat and compact pile; for this is very necessary to make the paper of a regular and equal thickness. It is now put under a second press, with all the sheets in contact with each other: this expresses a great quantity of water from the paper, and gives the sheets a very considerable strength; it also tends to take out those freckles in the surface which were occasioned by the impression of the felt; though it is necessary to have felts in the first pressure, because the paper is then so wet that it would be pressed into a solid mass if the sheets touched each other. The paper remains in the second press until another pile is made ready by the lifter, when it is taken out and sometimes separated sheet from sheet, which is called parting the packs: at other times it is taken in small masses of six or seven sheets into the drying-house.

For when the sheets are very thin, and it is found after the second pressure that they are formed by a fecula which is still saturated with a great deal of water, so that they have little consistence, it is probable that the second press has so joined them to one another that it is dif-

ficult to separate them; and, indeed, they cannot well be taken off, one by one, without tearing a great number: this, however, generally shows improper management in the second pressing. But, happily, this separation, sheet by sheet, is not necessary for drying, so that seven or eight may be taken together, which is called forming the pages; sometimes, also, a less number may do when the paper is of a large size, but never less than three sheets are *hung up* together. It is of more importance than we are at first aware of, that the sheets should remain, as it were, pasted several of them together; if they were single, and one by one, they could not resist the moisture of the size, yet this moisture is sufficient to facilitate their operation; and to hinder their separating, when they are hung up to dry, they should be so placed that the pages may receive the wind in the surface and not in the sides and edges.

The drying-locks are extensive apartments, usually the upper parts of all the buildings of the mill; the sides are formed by loffer boards, which are a kind of lattice, or boarding, which can be opened and shut to admit more or less air at pleasure. The sheets are taken up upon a piece of wood like a T, and hung upon hair lines, stretched across large horizontal wooden frames, called *tribbles*; and then, as they are filled, are lifted up between upright posts, to the top of the room, and retained by pegs put in the posts; then another frame, being filled, is put up in its turn, and so on, till the loft is filled from top to bottom.

Mr. Bramah has suggested an improvement in this method, which enables women or children to perform the business of the drying-house instead of men, and adds considerable facility to the process of hanging and re-hanging the sheets. Instead of using *tribbles*, he has a proper number of frames, made of wood, mounted with leaves, to represent so many frames or clothes' horses, similar to those used by any common laundress, but of a length proportioned to the dimensions of the drying-house, which may be divided into two or more rows, so as to leave room and proper aisles or passages for the convenience of the operators to hang and re-hang the sheets; and the height of the frames may be equal, or nearly equal, to one half the story in which they are fixed. They are stationed at proper distances from each other by means of upright posts with grooves fitted to the frames so that each may slide vertically up and down, by means of lines and pulleys affixed to each, just like sash windows that are double hung; so that, while one of the frames is sliding up to touch the ceiling of the building with its upper edges, the alternate one may be depressed till its lower edge, or the paper which hangs upon it, may come nearly in contact with the floor. By this means children can reach to hang the paper, and can afterwards elevate the frames to their proper height in the loft.

Writing paper, when dry, is carried to an apartment where it is sized by dipping each page, that is, each bundle of thirty-four or thirty-five sheets, which have been dried together, into a vat, containing a weak size. Printing-papers

are more generally sized in the beating-engine. The best size is made from shreds and parings got from tanners, curriers, and parchment-makers; all the putrefied parts and the lime are carefully separated from them, and they are enclosed in a kind of basket, and let down by a rope and pulley into the cauldron. This is a late invention, and serves two valuable purposes. It makes it easy to draw out the pieces of leather when the size is extracted from them by boiling, or easy to return them into the boiler if the operation is not complete. When the glutinous substance is sufficiently extracted it is allowed to settle for some time, and it is twice filtered before it is put into the vat where they dip the paper. Immediately before the operation, a certain quantity of alum is added to the size. The workman takes a handful of the sheets, smoothed and rendered as supple as possible, in his left hand, dips them into the vat, and holds them separate with his right, that they equally imbibe the size. After holding them above the vessel for a space of time, he sizes on the other side with his right hand, and again dips them into the vessel. When he has finished ten or a dozen of these handfuls, they are submitted to the action of the press, from which the superfluous size is carried back into the vat by means of a small pipe. The vessel in which the paper is sized is sometimes made of copper, and finished with a grate, to give the size, when necessary, a due temperature, and a piece of thin board or felt is placed between every handful as they are laid on the table of the press. This is technically called 'tub-sizing.'

After the sheets are sized and pressed, they must be quickly separated from each other, to prevent their adhering together; but it is to be remembered that the size is an extremely weak solution, so that the sheets will be in no danger of adhering until they are dry. In some of the most improved mills the sizing is performed in a machine, consisting of a large square vat, or wooden cistern, containing the size; in this a strong screw press is situated horizontally, the side beams of the press forming the outsides of the vat, and the screw works through a tight collar of leather. The press being open, the sheets of paper are suspended on lines, stretched in a frame, similar to those on which they are dried, and this is let down to immerse them in the size; and, after remaining a proper time, the screw of the press is worked, and the sheets thus gathered up into a close parcel; then, the lines being withdrawn, a strong pressure is given, and the paper, when taken out, is finished ready to be hung up again to dry. By this means the paper is sized very equally, whereas, in the old method of tub-sizing, some sheets drained off more size than others, and rendered them unequal as well as making marks in them.

The sizing of most printing-papers is however accomplished by throwing a small quantity of oil mixed with alum, pounded very fine, into the beating-engine towards the end of the process. About a pint and a half, or less, is sufficient to give the paper a proper quality for printing; powder-blue is also put into the engine to give a bloom to the paper.

When the paper is sufficiently dry, it is carried to the finishing room, called the *Saul*, where it is pressed, selected, and examined, by women, who remove all damaged and imperfect sheets; it is then put into the dry press, and squeezed with an immense force, to render the paper flat, and give it a good surface. The lever of this press is fifteen or eighteen feet long, and ten or twenty people are employed at the last to work it, though they sometimes use the *Sampson*, as it is called; that is, a windlass like a crane, with which they move the lever of the screw. The dry press is generally large enough to hold two packs of ordinary paper side by side. The *Saul* is surrounded by these dry presses. The paper remains under pressure as long as the demand of the mill will admit; but while it is in this operation it is parted, once, twice, or even three times: to do this, the heaps are carried back to the table, and the whole turned sheet by sheet, in such a manner that the surface of every sheet is exposed to a new one, and in this situation they are again brought under the press. It is in conducting these operations of parting and pressing sometimes four or five times, or as often as the nature of the paper requires, that much of the perfection and finish of the finest writing and drawing-paper consist. If the stuff is fine, or the paper slender, the parting is less frequently repeated. In this operation, it is necessary to alter the situation of the heaps, with regard to one another, every time they are put under the press; and, as the heaps are highest in the middle, to place small pieces of felt, which will bring all parts of the pile to an equal pressure.

Bramah's hydrostatic-press has been found most admirably adapted for dry-pressing paper. This press has no screw, but, in lieu of it, a piston or plunger, fitted accurately into a chamber, or barrel of cast iron, by collars of leather; a small force-pump is situated near to the press, and water is injected by it into the great chamber, and the piston is thus expelled from it; and presses up the board, or follower of the press, with a power in proportion to the relative diameters of the pump and the piston. The bottom of the cylinder must be made sufficiently strong, with the other parts of the surface, to resist the greatest strain which can ever be applied to it: the pipe from the forcing-pump communicates with the cylinder at the bottom, and the pump has, of course, valves to prevent the return of the water.

In a screw-press, of a fine thread, it requires nearly as much labor to unscrew as to screw it down, an evidence of the enormous friction of a screw when acting against a great pressure; but the hydrostatic-press only requires a cock to be opened to let out the water from beneath the piston, which then descends quickly by its own gravity, or the elasticity of the substance under the pressure. The greatest convenience of the hydrostatic-press is, that the power can so easily be transmitted to it from any distance, and in any direction, by means of pipes conducted along in situations where all other means of conveying the motion would be complicated and expensive in the extreme. Thus, in a large paper-mill, an injecting pump may be kept in

constant action by the water-mill, and inject water into an air vessel, from which pipes are conducted to presses in all parts of the mill, and, by simply opening a cock at any press, the required pressure will be instantly given by the elasticity of the confined air operating on the enlarged surface of the piston of any press. The air vessel has, of course, a safety-valve to allow the escape of the water, when the pressure becomes so great as to endanger the rupture of any of the vessels; for it is to be observed that the power of this principle is irresistible when the pump is worked by a mill, and will burst any vessels without the least appearances of strain on the moving parts of the pump.

After dry-pressing, the paper is finished, and only requires to be assorted into different lots, according to its quality and faults; after which it is made up into quires.

II. OF PAPER-MAKING BY THE MACHINE.

The machine now generally used was originally suggested by a Frenchman, Louis Robert, who sold his model to M. Didot. This gentleman brought it to England, and prevailing on the Messrs. Fourdrinier's to join in perfecting it, a patent was taken out for the benefit of these parties by Mr. Gamble, the brother-in-law of M. Didot. Figs. 1 and 2, plate III. PAPER-MAKING, exhibit a side view or elevation of the machine, with a plan annexed; and the same letters of reference are employed in both figures. The pulp being prepared in the usual way is placed in the vat, and by the addition of water brought to the required consistency; it is then suffered to run through certain apertures in the side or front of the vat at A, and conducted thence by an inclined plane B B, in a uniform stream upon the surface of the revolving web *a a a*, &c., which is so placed that its surface shall be as nearly level as possible, and shall have its revolving motion in the direction in which the stream of pulp runs from the vat. This web is kept extended longitudinally by two principal or extreme rollers, C and E, upon which it revolves; and the upper part thereof, upon which the paper is formed, is supported and kept level by a number of small rollers *b, b, b, b*, and other smaller ones afterwards described, placed parallel with the other two C and E, and at such distances from each other as to prevent the web from being pressed or weighed down by the pulp into the spaces between them, and also to cause the pulp to spread itself uniformly upon the surface of the web or sheet, thereby producing a sheet of paper of a uniform thickness. The width of the sheet of paper is determined by two pieces of wood set edgeways upon the web, exactly parallel with each other, and with the line of motion of the web. These pieces require no particular precision as to their dimensions. Between, and in contact as well with the under edges of these pieces as with the upper surface of the web, the patentees place two endless straps of leather of a width corresponding to the thickness of the pieces; and cause them to revolve upon pulleys with a velocity exactly equal to the velocity of the revolving web. They likewise place similar

pieces of the web, and exactly opposite to those upon the upper surface; so that the web is pressed between the upper and under straps and pieces, and the liquid pulp is then prevented from running off towards the sides. These pieces and their straps are called *dickeys* (F and G are the pieces, and H and I are the straps). Near that part of the web upon which the pulp falls from the inclined plane at C, and between it and the vat, is placed a flap of oiled silk or other flexible material; one edge on the web, the other being fastened to a piece of wood laid across the surface of the web, but not touching it, the length of the said piece corresponding to the width between, and being supported at each end by the *dickeys*. The flap of oiled silk is to prevent the pulp from running back towards the vat. Between the two principal or extreme rollers C and E, upon which the web revolves, and about two feet and a half from E, and between that and the vat, are placed two other rollers or cylinders J and K, one above the other, which cause the upper part of the web with the paper forming thereon to pass between them for the purpose of pressing out the water; and, from this use of them, they are distinguished by the denomination of the first or wet press cylinders or rollers. In order to guard the pulp, which before passing between the cylinders is yet in a soft state, from being dislodged or otherwise injured by the upper roller or cylinder J coming immediately in contact with it, the patentees use another revolving web of wove wire or other fit material, which in this case may be of felting, as at *d d d d*, of the same width as the one above-mentioned, but not so long, the first is called the under, and the second the upper web: the bottom part of the upper web is caused to pass between the two cylinders J and K, so that its under surface falls upon the surface of the pulp or paper, and defends it from the action of the upper cylinder J. This upper web is kept extended by, and made to revolve upon, two rollers L and M, placed one on each side of the wet press cylinders J and K, and at a convenient height above them. The wet press cylinders are provided with a compressing apparatus at each end, to give the necessary pressure to the paper.

It is evident then, that, if motion is given in the proper direction to the wet press cylinders J and K, having both the webs thus compressed between them, such webs will be drawn along by them, and caused to revolve upon their respective rollers; and that as long as these webs continue so to revolve, and the pulp continues supplied and running upon the surface of the under web, so long will the machine continue making a sheet of paper of continually increasing length.

But as the paper, after having passed between the first press cylinders, has not obtained such a degree of consistency and strength as to allow of its being removed from the machine, and cut into sheets and laid in packs; the patentees cause it to pass through a second pair of pressing cylinders N and O, which they denominate the second or dry press, where it receives such a further degree of pressure and consequent strength;

as to fit it for all the subsequent operations necessary to finishing it for market. The second or dry press consists of a pair of cylinders adapted to strong pressure, and which is therefore made of hard metal (preferring brass as not liable to rust), which cylinders, N and O, are turned perfectly true and smooth, and placed one above the other at a convenient distance from and exactly parallel with the first press cylinders. Between the second press cylinders, N and O, is placed the upper part of a revolving web of flannel or felting, or other fit material (represented by the lines at *c, e, e, e*; and this is made to revolve upon and to be kept extended by two rollers P and Q, one on each side of the cylinders N and O; and, by giving motion to those cylinders N and O, we cause the felting to revolve upon its rollers P and Q, in the same direction and with the same velocity as the under web. And the paper after it has passed the first press, and arrived at the extreme roller E, upon which the web revolves, is detached from the surface of the web, and deposited upon the revolving felting, and with it made to pass between the second press cylinders. The paper is then collected and wound upon reels or rollers as at R, which are successively removed and others applied as they become charged or filled with paper. The long sheets of paper thus obtained are, by a subsequent process, cut into others of the required dimensions.

Another machine for the manufacture of paper has been invented by Mr. Dickinson. He makes use of a hollow brass cylinder or barrel closed at the ends, but having a large hollow tube for the axis. This cylinder is so contrived that the periphery of it is uniformly pervious to water, and covered with fine woven wire. It is made to revolve in a vat of very diluted pulp, in which it is about two-thirds immersed: during the revolution of the cylinder the water of the pulp passes through the pervious surface into the interior, and flows out through the hollow tube before mentioned, each end of which passes through the sides of the vat in which the cylinder revolves. As the water of the pulp flows through the surface of the cylinder the fibres of rag floating in the vat are deposited on the wire, and thereby gradually form the paper on every part of the cylinder during its immersion in the fluid pulp. An endless felt takes the paper off the highest point of the cylinder, with which it is brought in contact by the pressure of a roller, called technically the couching roll. The hollow axis before mentioned does not revolve with the cylinder, but is firmly fixed to the sides of the vat of pulp, through which it conveys the water from the interior of the cylinder, and it has attached to it troughs and other apparatus in the interior of the cylinder from which it is the channel of communication to two double acting air pumps, by the working of which two distinct effects are produced, both of which are essential to the operation of the machine. In the first place by drawing air from the inside of the cylinder a partial exhaustion of the interior is produced, and the influx of the water and the adhesion of the rag to the surface are promoted; in the next place the air so drawn away is forced into a receiver, where it is condensed, and from which

it returns by a separate pipe to a long narrow trough in the inside of the cylinder parallel with the hollow axis, and under the place where the paper quits the cylinder and becomes attached to the endless felt which carries it away in a continued stream, the adhesion to this felt being produced by a continued blast of compressed air issuing from this trough, and which detaches the paper from the surface of the hollow cylinder on which it is made. The formation of the cylinder is very selaborate, and the apparatus essential to the process so complicated that the machine has not been adopted by any manufacturer except the original inventor Mr. Dickinson; but in his management it works with great precision and effect, and produces paper of very good quality.

The mode of pressing the paper on the endless felt and reeling it is the same in this machine as in those already described.

STEAM DRYING.—It was some years after the invention and perfecting of these machines before any other advance was made in the manufacture; but recently it has been carried another stage by drying the paper immediately as it comes from the pressing rolls of the machine. This is done by leading the paper over cylinders heated by steam, which are kept in motion in the same direction that the paper travels, and at the same rate.

The annexed diagram is a sketch of the apparatus most commonly in use for this purpose. A,



A, A, are three cylinders or steam rollers as they are technically called, about three feet diameter, which are made to revolve by wheel work in the direction shown, and to carry round an endless felt in close contact with a large portion of the surface of each, and the rate of movement is adjustable so that it may be made to correspond with the rate of the machine which makes the paper. The axis of each roll is a tube, at one end of which steam is introduced through a cock, by which the attendant adjusts the supply so as to regulate the temperature of the cylinders; at the other end the water formed by the condensation of the steam is discharged through a pipe, which is made to descend nearly to the bottom of the inside of the cylinder, and the force of the steam drives the water up through it. The end of the paper, as it comes in a wet state from the press rolls of the making machine, is led by the attendant over the top of the endless felt belonging to the steam rolls, and conducted between the felt and each of the rolls in succession; and the water which the press rolls have left in it, by the heat of the cylinders, converted into steam, and driven off, so that by the time it arrives at the roll B it is dry and fit for cutting into sheets, and sending out of the mill, after the usual pressure, in the dry state; and this process gives the paper a smoothness and gloss which is considered as an improvement of the article.

PAPER OFFICE, an office in the palace of Whitehall, in which all the public writings, matters of state and council, proclamations, letters, intelligences, negotiations abroad, and generally all despatches that pass through the offices of the secretaries of state, are lodged, by way of library.

PAPHIA, a surname of Venus, from Paphos.

PAPHLAGONES, or **PAPHLAGONIANS**, the inhabitants of Paphlagonia, who are mentioned by Homer as a brave people, but by Lucian as 'superstitious and silly.' Bochart derives their name and descent from Phaleg or Peleg, the son of Heber.

PAPHLAGONIA, in ancient geography, a country of the Hither Asia, beginning at Parthenius, a river of Bithynia, on the west, and extending in length to the Halys east, with the Euxine on the north, Galatia on the south. Pliny enlarges the limits on the west side to the river Billis, on this side the Parthenius. It is called *Pylæmenia* by Pliny.

PAPHOS, in ancient geography, two adjoining islands on the west side of the island of Cyprus; the one called *Halæ Paphos* (Strabo, Ptolemy, Pliny); the other *Nea Paphos*. When mentioned without an adjunct, this latter is always understood. Both were dedicated to Venus, hence surnamed *Paphia*, and left undistinguished by the poets (Virgil, Horace). The town of Paphos was restored by Augustus, after a shock of an earthquake, and called *Augusta* (Dio). It is situated on the south side: it contained the celebrated temple of Venus; which, together with the city, was destroyed by a second earthquake, so that the least vestige of it is not now to be seen. A lake in the neighbourhood, which in summer overflows with stagnant and corrupted water, renders the air unwholesome.

PAPHUS, in mythology, the son of Pygmalion, by the ivory statue of a woman, which he made, and to which Venus gave life. Ovid. Met. X. 297. See **PYGMALION**.

PAPIAS, bishop of Hieropolis, in Phrygia, a disciple of St. John the Evangelist, and the companion of Polycarp, as St. Jerome observes. He composed a work in five books, entitled *Expositions of the Discourses of our Lord*, of which there are only some fragments remaining.

PAPIER MACHE', a substance made of white or brown paper, boiled in water, and beaten in a mortar, till reduced into a kind of paste, and then boiled with a solution of gum arabic or of size, to give tenacity to the paste, which is afterwards formed into different toys, &c., by pressing it into oiled moulds. When dry, it is done over with a mixture of size and lamp-black, and afterwards varnished. The black varnish for these toys, according to Dr. Lewis, is prepared as follows:—Some colophony, or turpentine, boiled down till it becomes black and friable, is melted in a glazed earthen vessel, and thrice as much amber in fine powder sprinkled in by degrees, with the addition of a little spirit or oil of turpentine now and then; when the amber is melted, sprinkle in the same quantity of *sarocollo*, continuing to stir them, and to add more spirit of turpentine, till the whole becomes

fluid; then strain out the clear through a coarse hair-bag, pressing it gently between hot boards. This varnish, mixed with ivory-black in fine powder, is applied, in a hot room, on the dried paper paste; which is then set in a gently heated oven, next day in a hotter oven, and the third day in a very hot one, and let stand each time till the oven grows cold. The paste thus varnished, is hard, durable, glossy, and bears liquors hot or cold.

PAPILIO, *n. s.* } Fr. *papillon*; Lat. *PAPILIONACEOUS*, *adj.* } *papilio*. The butterfly. See below. *Papilionaceous* is resembling the butterfly in shape.

Conjecture cannot estimate all the kinds of *papilio*, natives of this island, to fall short of three hundred.

Ray.

The flowers of some plants are called *papilionaceous* by botanists, which represent something of the figure of a butterfly with its wings displayed; and here the petala, or flower leaves, are always of a difform figure: they are four in number, but joined together at the extremities; one of these is usually larger than the rest, and is erected in the middle of the flower, and by some called *vexillum*; the plants that have this flower are of the leguminous kind; as pease, vetches, &c.

Quincy.

All leguminous plants are, as the learned say, *papilionaceous*, or bear butterflyed flowers.

Haris.

And, though a worm, when he was lost,

Or caterpillar, at the most,

When next we see him, wings he wears,

And in *papilio*-pomp appears;

Becomes oviparous.

Cowper.

PAPILIO, the butterfly, in zoology; a genus of insects belonging to the order of lepidoptera. It has four wings, imbricated with a kind of downy scales; the tongue is convoluted in a spiral form, and the body is hairy. The antennæ grow thicker towards their extremity, and are in most subjects terminated by a kind of capitulum or head. The wings, when sitting, are erect, insomuch that their extremities meet or touch one another above the body. They fly in the day-time. The beauties of this elegant part of the creation are well known. The chrysalis is at once the tomb of the caterpillar and the cradle of the butterfly. It is within a silken cocoon, or under a transparent veil, that this great miracle of nature is daily wrought. Take one of their cods, make an aperture in it with a pair of scissors, fix it against a glass; observe the insect, you will perceive the organs gradually displaying themselves; follow his operations with your eye; he struggles to break loose from his confinement. Observe the frothy liquor which it disgorges; that liquor serves to soften the end of the cocoon, which at length yields to the butting insect's head. By degrees the bar is removed, and the butterfly springs forth; the impression of the air acts upon its wings, slightly apparent at first, but which afterwards expand with remarkable rapidity. The display of them is sometimes checked by drought, in which case the insect is deprived of the faculty of flying. The rostrum, extended under the covering of the chrysalis, is in this last state rolled up into a spiral, and lodged in a recess prepared for it. The fly is now perfectly formed; it gently flutters; then takes its flight, plunging its rostrum

into the cups of flowers. The species are principally distinguished by the color of their wings.

PAPILLARY, or ? Of Lat. *papilla*. Having **PAP'ILLOUS**, *adj.* } ing emulgent vessels, or the resemblance of paps.

Nutritious materials that slip through the defective *papillary* strainers. *Blackmore.*

The *papillous* inward coat of the intestines is extremely sensible. *Aruthnot on Aliments.*

Malpighi concludes, because the outward cover of the tongue is perforated, under which lie *papillary* parts, that in these the taste lieth. *Derham.*

PAPIN (Isaac), a French divine, born at Blois, in 1657. He studied divinity and philosophy at Geneva, and Greek and Hebrew at Orleans. The university of Geneva being divided about the doctrine of grace, he wrote a treatise, entitled *The Faith Reduced to its Just Bounds*, recommending toleration; but he met with so little that he took refuge in England, in 1687, where he was ordained by Dr. Turner, bishop of Ely. Yet, after all, he returned to France, joined the church of Rome, and died in Paris in 1709, while finishing a work on the Toleration of Protestants, and the Authority of the Church.

PAPINIAN, a celebrated Roman lawyer of the third century, under Severus; who had so high an opinion of his worth, that he recommended his sons Caracalla and Geta to his care. Caracalla, having murdered his brother, ordered Papinian to compose an oration, to excuse this murder to the senate and people. This he refused to undertake, and the brutal emperor therefore ordered him to be beheaded, and his body dragged through the streets of Rome. Papinian wrote several treatises in the line of his profession.

PAP'IST, *n. s.* } Fr. *papiste*; Lat. *papista*.
PAP'ISTICAL, *adj.* } *ta*. A Roman Catholic:
PAP'ISTRY, *n. s.* } one that professes the doctrines of the Church of Rome: papistical is popish; adhering to or characteristic of popery: papistry is the system or doctrine of popery.

Papistry, as a standing pool, covered and overflowed all England. *Ascham's Schoolmaster.*

A great number of parishes in England consist of rude and ignorant men, drowned in *papistry*.

There are some *papistical* practitioners among you. *Whitgift.*
Id.

Either let our *papists* suffer this vain opinion of infallibility to be pulled up by the very roots out of their breasts, or else there can be no hope so much as of a consultation of peace. *Bp. Hall.*

The principal clergyman had frequent conferences with the prince, to persuade him to change his religion, and become a *papist*. *Clarendon.*

PAPISTS. See **ROMAN CATHOLICISM**.

PAPPOUS, *adj.* Barb. Lat. *papposus*. Downy; having a soft light down, growing out of the seeds of some plants; and which can be blown any where with the wind.

Another thing argumentative of providence is, that *pappous* plumage growing upon the tops of some seeds, whereby they are wafted with the wind, and by that means disseminated far and wide.

Ray on the Creation.

Dandelion, and most of the *pappous* kind, have long numerous feathers, by which they are wafted every way. *Derham.*

PAPPUS, an eminent philosopher of Alexandria, said by Suidas to have flourished under Theodosius the Great, who reigned from A. D. 379 to 395. His writings show him to have been a consummate mathematician: many of them are lost; the rest continued long in MS. detached parts having only been occasionally published in the seventeenth century, until Charles Manolesius published his remains entire at Bologna, in 1660, in folio.

PAPPUS, in botany, a soft downy substance that grows on the seeds of certain plants, as thistles, hawkweed, &c., serving to buoy them up in the air.

PAPUA. The island of Papua, or The Papuan Archipelago (for whether more than one island has not been described under this name is uncertain), forms a natural division of the grand Eastern Archipelago, being separated on the west from the Molucca Islands by the channel named the Gilolo Passage; on the south from New Holland by Torres Strait; on the north it has the Papua Sea; and on the east is separated from Polynesia by the sea between the New Hebrides and the Friendly Islands. This archipelago possesses neither horned cattle, horses, nor sheep, the domestic animals being confined to hogs and dogs, and of their wild ones we have scarcely any knowledge.

An extent of coast has been traced here reaching in a south-west direction from the Sound of Gilolo about 1200 miles. It is indented by such deep bays that it resembles a chain of peninsulas; the coast, viewed from the sea, rises gradually into hills of considerable elevation; but there are no mountains of which the height is remarkable. The whole is covered with palm trees and timber of a large size, among which the cocoa nut, and the two species of the bread-fruit tree, are found, as also pine-apples and plantains. Nutmeg trees also grow in a wild state. The natives are particularly dexterous in the use of spears, and bows and arrows; and discharge arrows six feet long with bows made of bamboo, having a string of split rattan. In the interior they practise gardening, and some sort of agriculture, supplying the inhabitants on the coast with food, in exchange for axes, knives, and cutlery. These the natives on the coast purchase from the Malays and the Chinese, particularly the latter, from whom they also buy blue and red cloth. In exchange the Chinese carry back missoy bark, slaves, ambergris, sea slug (*biche de mer*), tortoise-shell, small pearls, black and red lories, birds of paradise, and many other species of birds.

On the north-west coast of the island captain Forrest observed dwellings, built on posts, fixed several yards below water-mark, so that the tenement is always above the water; a long stage, supported by posts, going from it to the land just at high water-mark. This tenement contains many families, who live in cabins on each side of a wide common hall that goes through the middle of it, and has doors opening to the stage towards the land and towards the

sea. These habitations seem constructed in this singular manner in order to give them facilities of escape either by sea or land. If attacked from the land, the inmates launch their boats along the stage at any time of the tide; if from the sea, they escape into the woods. Their cabins are furnished only with a mat or two, a fire-place, an earthen pot, and perhaps a china plate or basin, together with some sago flour. As they cook in each cabin, the smoke issues at every part of the roof, so that at a distance the whole seems to smoke. The natives wear their hair bushed out round their heads to the circumference of two and a half and three feet; and, to make it more extensive, comb it out horizontally from their heads, adorning it with feathers. The men wear a thin stuff that comes from the coconut tree, and resembles a coarse kind of cloth, tied forward round the middle, and up behind, between the thighs. The women wear blue Surat baftas, tucked up behind, like the men, so that the body and thigh are almost naked; as boys and girls go entirely. They are fond of glass and china beads, which both sexes wear about the wrist, but the women only on the left ear. Forrest often saw the latter laboring hard in fixing posts in the ground for stages, in making mats, or in forming pieces of clay into earthen pots, while the men were sauntering about.

Some of the horaforas of the interior are said to have long hair, and are of robust appearance; but in the western extremity all the inhabitants seen by voyagers presented the mop head of the oriental negro. The inhabitants of the islands more westerly buy the Papuans for slaves, and the natives of the west coast of New Guinea make slaves of those of the east. The latter have the gristle between the nostrils pierced with tortoise-shell. About April and March the Papuans of New Guinea and Salwatty assemble in great numbers, and make war on Gilolo, Ceram, Amboyna, Amblœ, &c.

The British have had little intercourse with the Papuans. When the Panther, a Bombay cruiser, was in 1791 off their coast, the surgeon of the vessel was decoyed into the canoes of the natives, and murdered; after which they made an attempt on the ship, on which they discharged a shower of arrows, wounding four of the crew, and did not disperse until a discharge of the great guns and small arms asserted her superiority.

PAPUDO, a port of the kingdom of Chili, on the coast of the South Sea. Lat. 32° 36' S.

PAPYRUS, the famous reed from which was made the far-famed paper of Egypt. There was an opinion generally received in Europe that this plant was lost. But Mr. Bruce not only saw the papyrus growing both in Egypt and Abyssinia, but actually made a paper of it in imitation of that of the ancients. He tells us, likewise, that, so far from any part of it being useless, the whole plant is at this day used in Abyssinia for making boats, a piece of the acacia tree being put in the bottom to serve as a keel, like the boats of ancient Egypt. From the scarcity of wood, which was very great in Egypt, this lower part was likewise used in making cups, moulds, and other necessary uten-

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sils: one use of the woody part was to serve for what we call boards or covers for binding the leaves, which were made of the bark; we know that this was anciently one use of it, both from Alcæus and Anacreon. The papyrus grows in the marshes of Egypt, or in the stagnant places of the Nile. Its roots are tortuous, and in thickness about four or five inches; its stem is triangular, rising to the height of ten cubits. The stem tapers from the bottom, and terminates in a point. It carries a top or plume of small hairs, and its roots throw to the right and left a great number of small fibres, which support the plants against the violence of the wind. Formerly it used to grow in immense quantities. The Egyptians made of this plant paper fit for writing, which the Greeks called βιβλος or philuria, and also καρτης; hence the Latin charta; for in general charta is used for the paper of Egypt. The ancient botanists placed the papyrus among the graminous plants or dog-grass; ignorant of the particular kind to which it belonged, they were contented to specify it under the name of papyrus, of which there were two kinds, that of Egypt, and that of Sicily. Modern botanists have endeavoured to show that these two plants are one and the same species of cyperus, found in the catalogues and descriptions of plants published since the edition of Morrison's work, where the papyrus is called cyperus Niloticus, vel Syriacus maximus papyraceus.

The papyrus of Sicily is a plant resembling the Egyptian papyrus, in Italy called papero, and, according to Cæsalpin, pipero. This papyrus of Sicily has been cultivated in the garden of Pisa; and Cæsalpin, who himself examined the plant, says it is different from the papyrus of Egypt. The papyrus, says he, which is commonly called pipero in Sicily, has a longer and thicker stem than the plant cyperus. It rises sometimes to four cubits; the angles are obtuse, and the stem at the base is surrounded with leaves growing from the root; there are no leaves on the stem even when the plant is at the greatest perfection, but it carries at the top a large plume, which resembles a great tuft of dishevelled hairs; this is composed of a great number of triangular pedicles, in the form of reeds; at the extremity of which are placed the flowers, between two small leaves of a reddish color like the cyperus. The roots are woody, about the thickness of reeds, jointed, and they throw out a great number of branches, which extend themselves in an oblique direction. These are scented somewhat like the cyperus, but their color is a lighter brown: from the lower part issue many small fibres, and from the higher a number of stems shoot up, which, in proportion as they are tender, contain a sweet juice. The plume of the papyrus of Sicily is pretty well described in a short account of it in the second part of the *Musæum de Boccone*. This plume is a tuft or assemblage of a great number of long slender pedicles, which grow from the same point of division, are disposed in the manner of a parasol, and which carry at the top three long and narrow leaves, from which issue other pedicles, shorter than the former, and terminating in several knots of flowers. Micheli, in his *Nova Plantarum Ge-*

nera, printed at Florence in 1728, has given an engraving of one of the long pedicles in its natural length: it is surrounded at the base with a case of about one inch and a half in height; towards the extremity, it carries three long and narrow leaves, and four pedicles, to which are fixed the knots of flowers. Every pedicle has also a small case surrounding its base. In short, we find in the *Grosto-Graphia* of Schencher, a very particular description of the plume of a kind of cyperus, which appears to be the Sicilian plant. From this account it appears that the papyrus of Sicily is well known to botanists. It were to be wished that we had as particular a description of the papyrus of Egypt; but these two plants have a near affinity to one another; they are confounded together by many authors. Theophrastus says, the sari and papyrus Nilotica have a decided character of resemblance, and only differ in this, that the papyrus sends forth thick and tall stems, which, being divided into slender plates, are fit for the fabrication of paper; whereas the sari has small stems, considerably shorter, and altogether useless for any kind of paper. The papyrus, which served anciently to make paper, must not be confounded with the papyrus of Sicily, found also in Calabria; for, according to Strabon, the papyrus was to be found in no place excepting Egypt and India. The greatest part of botanists have believed that the Sicilian plant is the same with the sari of Theophrastus; others have advanced that the papyrus of Egypt and the sari were the same plant in two different stages of its existences, or considered with respect to the greater or less height; which, according to them, might depend on the qualities of the soil, the difference of the climate, or other accidental causes.

Among many dried plants collected in the East Indies by M. Poivre, there is a kind of papyrus very different from that of Sicily. It carries a plume composed of a considerable tuft of pedicles, very long, weak, slender, and delicate, like single threads, terminating most frequently in two or three small narrow leaves, without any knot of flowers between them; hence this plume must be altogether barren. Those pedicles or threads are furnished with a pretty long membranous case, in which they are inserted; and they issue from the same point of direction, in the manner of a parasol. The plume, at its first appearance, is surrounded with leaves like the radii of a crown. The stem which supports it is about ten feet in height, where there are two feet under water; it is of a triangular form, but the angles are rounded; its thickness is about the size of a walking staff which fills the hand. The interior substance, although soft and full of fibres, is solid, and of a white color. The stem possesses a certain degree of strength, and is capable of resistance. It bends without breaking; and, as it is extremely light, it serves for a cane. This stem is not of equal thickness in its whole length; it tapers insensibly from the thickest part towards the top. It is without knots, and extremely smooth. When this plant grows out of the waters, in places simply moist, it is much smaller, the stems are lower, and the plume is composed of shorter pedicles or threads, termi-

nating at the top in three narrow leaves, a little longer than those at the plume, when the plant grows in the water. From the base of these leaves issue small knots of flowers, arranged as they are in the cyperus; but these knots are not elevated above the pedicles; they occupy the centre of the three leaves, between which they are placed, and form themselves into a small head. The leaves, which spring from the root and the lower part of the stem, resemble exactly those in the cyperus. This plant, which the inhabitants call sanga-sanga, grows in great abundance in their rivers and on their banks, but particularly in the river Tartas, near the Foulpoint in Madagascar. The inhabitants of these cantons use the bark of this plant for mats; they make it also into sails, into cordage for their fishing-houses, and into cords for their nets. This kind of papyrus different from the papyrus of Sicily by the disposition of its flowers, shows that there are two kinds of the cyperus which might easily be confounded with the papyrus of Egypt; whether we consider, on the one hand, to what purposes the inhabitants of the places where they grow have made them subservient; or, on the other, compare their form, their manner of growth, and the points in which they resemble each other. This comparison can be easily made from the accounts which Pliny and Theophrastus gave of the papyrus of Egypt, and by the figure and description given by Prosper Alpin, after having observed the plant on the banks of the Nile. But, as Strabo affirms that the papyrus is found nowhere but in Egypt and in India, it is possible that the papyrus of the isle of Madagascar, situated at the mouth of India, is the same with that of Egypt. Be that as it may, the inhabitants of this island have never derived from it those advantages which have immortalised the papyrus of Egypt.

PAQUASHE LAKE, a lake of North America. Long. 93° 30' W., lat. 50° 48' N.

PAQUILIGASTA, a town of South America, in the province of Tucuman, forty miles S.S.W. of St. Miguel de Tucuman.

PAR, *n. s.* Lat. *par*; Gr. *παρα*, nigh. State of equality, or equal value. This word is chiefly used as a term of commerce.

To estimate the *par*, it is necessary to know how much silver is in the coins of the two countries, by which you charge the bill of exchange. *Lock.*

Exchequer bills are below *par*. *Swift.*

My friend is the second after the treasurer; the rest of the great officers are much upon a *par*. *Id.*

PARA, GRAN, an extensive province of Brasil, bounded north by the kingdom of Granada, Guiana, and the great bay formed by the Atlantic at the entrance of the great river Amazons; east by the province of Maranhão; south by the provinces of Goias and Matto Grosso; and west by Peru. Belem is the capital.

This province is fertile in sugar-canes, coffee, and cocoa, ornamental and odoriferous woods, and other timber. Here is a peculiar species of puchari, or precious fruit tree, not of so large a size as the common kind; but the fruit is more aromatic, and forms an excellent substitute for nutmegs. The real jalap tree abounds also in Para, as well as many other medicinal plants.

There is also abundance of gums, well calculated to supply the place of gum arabic: and one species adapted for making sealing-wax. Several parts of Para abound with yellow ochre, frequently intermixed with a red ochre of brilliant color. The animals are similar to those in the other districts of Brasil. Formerly the sale of the flocks which grazed in the island of Marajo was one of the great resources of this colony; but at present the number of oxen is diminished. A large species of silk-worm, whose ball is three times the size of the common one, is found in great plenty in Para. It feeds on the leaves of the orange trees, but the silk obtained has not as yet proved a profitable article of commerce: but the numerous indigo plantations are in a very flourishing condition. The finest Brasil arnotto is brought from this district. The chief rivers are the Madera, the Topayos, the Zingu, the Araguay, and the Toccantins, which all come from the northern mountains of Brasil, and fall into the Amazons.

PARA, GRAN, the capital of the province of this name, is a handsome city standing on the banks of the river Toccantins, the navigation of which is difficult, except for very small craft: the Confidence sloop of war with great care sailed up it, however, and anchored near the town, several days previous to the British expedition against Cayenne. The commerce is of little consequence: the exports consisting only of a little rice and cocoa, and a few drugs, &c., to Maranh, whence they are embarked for Europe. Some small brigs were sent hither from Barbadoes, after the taking of Cayenne; but the trade must be a bad one, as the inhabitants are in general too poor to purchase English manufactures, except those of necessity. The climate is hot, as may well be supposed; and thunder, with lightning and rain, occur generally every afternoon. It has a citadel and castle, at the entrance of the bay upon the river, and contains about 8000 inhabitants. It is sixty miles from the mouth of the river.

PARA, a river of the above province and kingdom, is, properly speaking, one of the mouths of the Amazons, formed by the island of Joannes. It is about forty miles wide at its mouth, and runs about 200 miles in a north-east direction. Lat. 20° S.

PAR'ABLE, *n. s.* } Fr. *parabole*; Gr. *παράβολη*. A comparison or similitude; PARABOL'ICAL, *adj.* } PARABOL'ICALLY, *adv.* } a relation under which something else is figured; a mysterious speech or maxim: the adjective and adverb follow these senses. Parable, also, as an adjective, (from Lat. *parabilis*,) means easily procured.

And in manye suche *parablis* he pak to hem the word. Wiclif. Mark iv.

Balaam took up his *parable*, and said.

Numbers.

It is evident that some things are purposely couched in *parabolical* and mysterious expression; it is particularly the manner of prophetic instruction.

Barrow.

They were not well wishers unto *parable* physic, or remedies easily acquired, who derived medicines from the phoenix.

Browne.

Such from the text decry the *parabolical* exposition of Cajetan.

Id. *Vulgar Errors*.

These words, notwithstanding *parabolically* intended, admit no literal inference.

Browne.

What is thy fulsome *parable* to me?

My body is from all diseases free. Dryden.

The pellucid coat of the eye doth not lie in the same superficies with the white, but riseth up a hillock above its convexity, and is of an hyperbolical or *parabolical* figure.

Ray.

In the *parable* of the talents, our Saviour plainly teacheth us, that men are rewarded according to the improvements they make.

Nelson.

The scheme of these words is figurative, as being a *parabolical* description of God's vouchsafing to the world the invaluable blessing of the gospel, by the similitude of a king.

South.

The incident ray will describe, in the refracting medium, the *parabolical* curve.

Cheyne.

A PARABLE is a fable or allegorical instruction, founded on something real or apparent in nature or history, from which a moral is drawn by comparing it with something in which the people are more immediately concerned; such are the parables of Dives and Lazarus, of the Prodigal Son, of the Ten Virgins, &c. See ALLEGORY.

PARAB'OLA, *n. s.* Lat. *parabole*. A section of a cone.

The *parabola* is a conick section, arising from a cone's being cut by a plane parallel to one of its sides, or parallel to a plane that touches one side of the cone.

Harris.

Had the velocities of the several planets been greater or less than they are now, at the same distances from the sun, they would not have revolved in concentrick circles as they do, but have moved in hyperbolas or *parabolas*, or in ellipses, very eccentric.

Bentley.

PARABOLIC PYRAMIDOID, a solid figure, so named by Dr. Wallis from its formation. Thus let all the squares of the ordinates of a parabola be so placed that the axis shall pass perpendicularly through all their centres, then the aggregate of all these planes will form the aggregate of the parabolic pyramidoid. It is equal to half its circumscribed parallelopipedon. The solid content is found by multiplying the base by the altitude, and taking half the product.

PARABOLIC SPIRAL, a curve arising from the supposition that the parabola is bent till the axis come into the periphery of a circle, the ordinates still retaining their places with respect to the circle.

PARAB'OLOID, *n. s.* Gr. *παράβολη* and *εἶδος*, form or appearance. A paraboliform curve, in geometry, whose ordinates are supposed to be in subduplicate, subquadruplicate, &c., ratio of their respective abscissæ. There is also another species; for if you suppose the parameter, multiplied into the square of the abscissa, to be equal to the cube of the ordinate; then the curve is called a semi-cubical paraboloid.—Harris.

PARACEL'SUS (Aurelius Philip Theophrastus Bombastus, de Hohenheim), a famous physician, born at Einsfelden, in the canton of Schweiz. He was educated with great care by his father, who was the natural son of a German prince, and made a rapid progress in the study of physic. He afterwards travelled into France, Spain, Italy, and Germany. In his return to Switzer-

land, he stopped at Basle, where he read lectures on physic in the German tongue. He was one of the first who made use of chemical remedies with success, by which he acquired great reputation. See MEDICINE. He gloried in destroying the method established by Galen, and thus drew upon himself the hatred of the other physicians. It is said that he boasted of being able, by his remedies, to preserve the life of man for several generations; but he himself experienced the vanity of such boasting, by dying at Saltzburg, in 1504, at thirty-seven years of age according to some, or forty-eight according to others. The best edition of his works is that of Geneva in 1658, in 3 vols. folio.

PARACENTE'SIS, *n. s.* Fr. *paracentese*; Greek *παράκέντησις*, of *παράκέντω*, to pierce. That operation whereby any of the venters are perforated to let out any matter; as tapping, &c.

PARACENTESIS. See SURGERY.

PARACENTRICAL, *adj.* } Gr. *παρά*, be-
PARACEN'TRIC. } side, and *κέντρον*, a centre. Deviating from circularity.

Since the planets move in the elliptic orbits, in one of whose foci the sun is, and, by a radius from the sun describe equal areas in equal times, we must find out a law for the *paracentric* motion, that may make the orbits elliptic. *Cheyne.*

PARACENTRIC MOTION, the motion or space by which a revolving planet approaches nearer to or recedes farther from the sun, or centre of attraction.

PARACHUTE, a large and strong kind of umbrella, invented by M. Blanchard, the French aéronaut, to break a person's fall from an air balloon, in case of any accident happening to it at a high elevation. See AERONAUTICS.

PARACLETE, the Comforter, a name given to the Holy Ghost.

PARADE, *n. s.* Fr. *parade*; Ital. *parada*; of Lat. *paro*, to contrive or go about a thing. Order; array; procession; show; pomp.

The cherubim stood armed

To their night-watches in warlike *parade*. *Milton.*

Accustom him to make judgment of men by their inside, which often shews itself in little things, when they are not in *parade*, and upon their guard.

Locke on Education.

He is not led forth as to a review, but as to a battle; nor adorned for *parade*, but execution.

Granville.

— I hate the camp,

I hate its noise and stiff *parade*, its blank
And empty forms, and stately courtesy,
Where between bows and blows, a smile and stab,
There's scarce a moment. Soldiers always live
In idleness or peril: both are bad. *Proctor.*

Be rich; but of your wealth make no *parade*.
At least before your master's debts are paid. *Swift.*

PARADE, in a military sense, is the place where troops assemble or draw together, to mount guard, &c.

PARADE, in fencing, implies the action of parrying or turning off any thrust. See FENCING.

PARADIN (William), a French historian of the sixteenth century, born at Cuiseaux, near Chalons, was author of a great number of works; particularly the History of Aristæus respecting the version of the Pentateuch; and *Memorialia insignium Franciæ familiarum*.

PARADIS (Paul), a learned Venetian, who first taught the Hebrew language in the Royal College of Paris; and wrote some pieces on it.

PARADISE, *n. s.* Fr. *paradis*; Gr. *παράδεισος*. The region in which the first pair were placed; any happy region.

Consideration, like an angel, came,
And whipt the' offending Adam out of him;
Leaving his body as a *paradis*,
To envelope and contain celestial spirits.

Shakespeare.

If he should lead her into a fool's *paradis*,
It were very gross behaviour.

Id. Romeo and Juliet.

The earth

Shall all be *paradis*, far happier place
Than this of Eden, and far happier days.

Milton.

The ancients express the situation of the *paradiacal* earth in reference to the sea.

Burnet.

Such a mediocrity of heat would be so far from exalting the earth to a more happy and *paradiacal* state, that it would turn it to a barren wilderness.

Woodward's Natural History.

The summer is a kind of heaven when we wander in a *paradiacal* scene, among groves and gardens; but, at this season, we are like our poor first parents, turned out of that agreeable, though solitary life, and forced to look about for more people to help to bear our labours, to get into warmer houses, and hire together in cities.

Pope.

By Alla! I would answer nay;
Though on Al-Sirat's arch I stood,
Which totters o'er the fiery flood,
With *paradis* within my view,

And all his Houris beckoning through

Byron.

PARADISEA, in ornithology, a genus of birds belonging to the order of picae. The beak is covered with a belt or collar of downy feathers at the base; and the feathers on the sides are very long. 'Birds of this genus,' says Latham, 'have the bill slightly bending; the base covered with velvet-like feathers. The nostrils are small, and concealed by the feathers. The tail consists of ten feathers; the two middle ones, and sometimes more in several of the species, are very long, and webbed only at the base and tips. The legs and feet are very large and strong: they have three toes forward, one backward, and the middle connected to the outer one as far as the first joint. The whole of this genus have, till lately, been very imperfectly known; few cabinets possessing more than one species, viz. the greater, or what is called the common bird of Paradise; nor has any set of birds given rise to more fables, the various tales concerning which are to be found in every author; such as, their never touching the ground from their birth to death; living wholly on the dew; being produced without legs; and a hundred such stories, too ridiculous even to mention. This last error is hardly yet wholly eradicated. The Portuguese first found these birds on the island of Gilolo, the Papua Islands, and New Guinea; and they were known by the name of birds of the sun. The inhabitants of Ternate call them *manuco duwata*, the bird of God; whence the name *manuco diata*, used by some naturalists, is derived. The peculiar length and structure of their scapular feathers hinders them from settling

in high winds, on trees; and, when they are thrown on the ground by these winds, they cannot rise again. When taken by the natives, they are immediately killed, and they defend themselves with great courage with their formidable bills. Latham enumerates eight species, but there are many more.

1. *P. alba*, the white bird of Paradise, is the most rare, and has two varieties; one quite white, and the other black and white. The former is very rare. The second has the fore part black, and the back part white; with twelve crooked wiry shafts, which are almost naked, though, in some places, covered with hairs.

2. *P. makima*, the largest bird of Paradise, is commonly two feet four inches long; the head is small; the bill hard and long, of a pale color. The head and back part of the neck is lemon-colored, a little black about the eyes; about the neck, of the brightest glossy emerald green, soft like velvet; as is also the breast, which is black; the wings are large, and chestnut colored; the back part of the body is covered with long, straight, narrow feathers, of a pale brown color, similar to the plumes of the ostrich. These feathers are spread when the bird is on the wing; for which reason he can keep very long in the air. On both sides of the belly are two tufts of stiff and shorter feathers of a golden yellow, and shining. From the rump proceed two long stiff shafts, which are feathered on their extremities. These birds are found at the Aroo islands, fifteen Dutch miles east of Key, during the west or dry monsoon; and they return to New Guinea as soon as the east or west monsoon sets in. They come always in a flock of thirty or forty, and are led by a bird which the inhabitants of Aroo call the king. This leader is black, with red spots; and constantly flies higher than the rest of the flock, which never forsake him, but settle as soon as he settles; a circumstance that frequently proves their ruin when the king lights on the ground, whence they are not able to rise on account of the singular structure and disposition of their plumage. They are likewise unable to fly with the wind, which would ruin their loose plumage; but take their flight constantly against it, cautious not to venture out in hard blowing weather, as a strong wind frequently obliges them to come to the ground. During their flight they cry like starlings. Their note, however, approaches more to the croaking of ravens; which is heard very plainly when they are in distress from a fresh gale blowing on the back of their plumage. In Aroo, they settle on the highest trees, especially on the ficus benjamina of the hortus malabaricus, commonly called the waringa tree. The natives catch them with bird-lime, or in nooses, or shoot them with blunt arrows; dry and fumigate the bodies with sulphur or smoke, and sell them at Banda for half a rixdollar each; but at Aroo they may be bought for a spike-nail or a piece of old iron. Flocks of these birds are often seen flying from one island to the other against the wind. During the east monsoon their tails are moulted, so that they have them only during four months of the west monsoon.

3. *P. minor*, the smaller bird of Paradise is

about twenty-nine inches long. His beak is lead-colored, and paler at the point. The eyes are small, and enclosed in black about the neck. The head and back of the neck are of a dirty yellow; the back of a grayish yellow; the breast and belly of a dusky color; the wings small, and chestnut-colored. The long plumage is about a foot in length, and paler than in the large species; as in general the colors of this species are less bright than the former; though in most other respects they are alike. They likewise follow a leader, who is blacker, with a purplish cast, and finer in color than the rest. The neck and bill are larger in the male than in the female. They roost on the tops of the highest trees, and do not migrate. The natives sear the birds with a hot iron, and put them in a tube of bamboo for preservation.

4. *P. nigra Amboinensis*, a species of the black bird of Paradise, seen in Amboyna in 1689. This was only one foot in length, with a fine purple hue, a small head, and a straight bill. On its back, near the wings, are feathers of a blue and purple color, as on the other birds of Paradise; but under the wings, and over all the belly, they are yellow-colored, as in the common sort: on the back of the neck they are mouse-colored, mixed with green. Before the wings are two roundish tufts of feathers, which are green edged, and may be moved at pleasure by the bird, like wings. Instead of a tail, it has twelve or thirteen black, naked, wire-like shafts, hanging promiscuously like feathers. Its legs are strong, and have sharp claws. The head and eyes are remarkably small; the latter are surrounded with black.

5. *P. nigra major*, the large black bird of Paradise, is brought without wings or legs for sale; so that no accurate description of it has yet been given. Its figure, when stuffed, is narrow and round, but stretched in length to the extent of four spans. The plumage on the neck, head, and belly, is black and velvet-like, with a strong hue of purple and gold. The bill is blackish, and one inch long. On both sides are two bunches of feathers, which appear like wings. The plumage is soft, broad, similar to peacocks' feathers, with a glorious gloss and greenish hue. The feathers of the tail are of unequal length; those next to the belly are narrow, like hair; the two uppermost are much longer, and pointed; those immediately under them are a span and a half longer than the upper ones; they are stiff, on both sides fringed with a plumage like hair, black above, but glossy below. Birds of this species are brought only from one particular place of New Guinea.

6. *P. nigra minor*, the small black bird of Paradise, has plumage equal in length, but thinner in body, black above, and without any remarkable gloss, not having those shining peacock feathers which are found on the greater species. It wants likewise the three long jointed feathers of the tail, which the larger black species has.

7. *P. regalis*, or *regis*, the king's bird, is about seven inches long, and somewhat larger than a titmouse. Its head and eyes are small; the bill straight; the eyes included in circles of

black plumage; the crown of the head is flame-colored; the back of the neck blood-colored; the neck and breast of a chestnut-color, with a ring of the brightest emerald green. Its wings are in proportion strong; and the quill feathers dark, with red shing plumes, spots, and stripes. The tail is straight, short, and brown. Two long naked black shafts proceed from the rump, at least a hand-breadth beyond the tail; having at their extremities semilunar twisted plumage, of the most glaring green color above, and dusky below. The belly is white and green sprinkled; and on each side is a tuft of long plumage, feathered with a broad margin, being on one side green, and on the other dusky. The back is blood-red and brown, shining like silk. The legs are in size like those of a lark, three fore toes and one back toe. This bird associates not with any of the other birds of Paradise; but flits solitary from bush to bush, wherever he sees red berries, without ever mounting on tall trees.

PARADOX, *n. s.*

PARADOX'ICAL, *adj.*

PARADOX'ICALLY, *adv.*

PARADOX'ICALNESS, *n. s.*

PARADOX'OL'OGY.

in opinion in appearance absurd: the derivatives follow this sense.

A glosse there is to colour that *paradox*, and make it appear in shew not to be altogether unreasonable.

Hooker.

You undergo too strict a *paradox*,

Striving to make an ugly deed look fair.

Shakspeare.

How worthy are they to smart that mar the harmony of our peace, by the discordant jars of their new and *paradoxical* concerns!

Bp. Hall.

'Tis not possible for any man in his wits, though never so much addicted to *paradoxes*, to believe otherwise, but that the whole is greater than the part: that contradictions cannot be both true; that three and three make six; that four is more than three.

Wilkins.

'Tis an unnatural *paradox* in the doctrine of causes, that evil should proceed from goodness.

Holyday.

What hath been every where opinioned by all men is more than *paradoxical* to dispute.

Browne.

Perpend the difficulty, which obscurity, or unavoidable *paradoxology*, must put upon the attempter.

Id.

These will seem strange and *paradoxical* to one that takes a prospect of the world.

Norris.

In their love of God, men can never be too affectionate: it is as true, though it may seem a *paradox*, that in their hatred of sin, men may be sometimes too passionate.

Sprat.

Mankind in the gross is a gaping monster, that loves to be deceived, and has seldom been disappointed; nor is their vanity less fallacious to our philosophers, who adopt modes of truth to follow them through the paths of error, and defend *paradoxes* merely to be singular in defending them.

Mackenzie.

If their vanity of appearing singular puts them upon advancing *paradoxes*, and proving them as *para-soically*, they are usually laught at.

Collier.

PARADOX. No science abounds more with paradoxes than geometry; thus, that a right line should continually approach to the hyperbola, and yet never reach it, is a true paradox; and

in the same manner, a spiral may continually approach to a point, and yet not reach it in any number of revolutions, however great. See M'Laurin's Fluxions. See LOGARITHMS.

PARADOXI, a sort of mimes or buffoons among the ancients, who entertained the people with extempore effusions of drollery. They were also called *Paradoxologi*, *Ordonari*, *Neanicolagi*, and *Aretalogi*.

PARAGAUDE, among the ancient Romans, wreaths of gold, or silk and gold, interwoven in, not sewed to, their garments. The garment was sometimes of one color, with one *paragaude*; sometimes of two colors with two *paragaude*; or three colors, with three, &c. They were worn both by men and women.

PARAGUANA, a peninsula of Venezuela, Colombia, which is united to the continent by a narrow isthmus, on which stands the city of Coro. The isthmus is about a league in width, and the peninsula stretches from south-west to north-west for twenty leagues. It is chiefly inhabited by people of color and Indians, who breed great quantities of cattle on it.

PARAGOANA, a craggy cape on the coast of Venezuela, thirteen leagues from the city of Coro. Lat. 11° 52' N.

PARAGOGE, *n. s.* } Fr. *paragoge*; Gr. PARAGOG'IC. }

in rhetoric, whereby a letter or syllable is added to the end of a word without being essential to the meaning

In Hebrew, the ה is frequently *paragogic*; as in אֲכַרְכָּה, for אֲכַרְךָ, I will praise. The *paragogic* letters are the five following, viz. ו ו' ו' א ה, to which some add the ת. The use of *paragogic* letters is only to give a more full and agreeable sound to words, either for the sake of the verse, or the smoothness of the period. As in the Hebrew, letters are sometimes added 'euphonia gratia', so likewise, the four following letters, viz. ת ו' ו' ו', which, according to the grammatical rules, ought to be present, are omitted.

Dr. A. Rees.

PARAGON, *n. s. & v. a.* French *parangon*; Ital. *paragone*; Gr. *παράγων*. A pattern or model; to match; compare; parallel; be equal to (as in a pattern).

The picture of Pamela, in little form, he wore in a tablet, purposing to *paragon* the little one with Artemisia's length, not doubting but even, in that little quantity, the excellency of that would shine through the weakness of the other.

Sidney.

Alone he rode without his *paragon*.

Spenser.

An angel! or, if not,

An earthly *paragon*.

Shakspeare.

I will give thee bloody teeth,

If thou with Cæsar *paragon* again

My man of men.

Id.

We will wear our mortal state with her, Catharine our queen before, the primest creature That's *paragon'd* i' th' world.

Id. Henry VIII.

Proud seat

Of Lucifer, so by allusion called

Of that bright star to Satan *paragon'd*.

Milton.

PARAGONG, a town of the province of Bootan, North Hindostan, and capital of a district of the same name. It is famous for its manufacture of swords, daggers, arrows, and

images of Boodh. The residence of the governor of the district, whose authority extends from the confines of Thibet to Bengal, has a palace well fortified. He is amenable to the Deb or Deveh rajah of Tassisudon, a tributary of the Grand Lama of Thibet. Long. 89° 21' E., lat. 27° 43' N.

PARAGRAPH, *n. s.* } Fr. *paragraph* ;
PARAGRAPHICAL, *adj.* } Greek *παράγραφη*.
PARAGRAPHICALLY, *adv.* } A distinct part of a discourse.

Of his last *paragraph*, I have transcribed the most important parts. *Swift.*

When one subject is continued to a considerable length, the larger divisions of it should be put into *paragraphs*. *Murray.*

A PARAGRAPH is properly a section or division of a chapter, and in references is marked thus, §.

PARAGUA, a river of New Granada, Colombia, in the province of Maracaibo, which runs S. S. E., and enters the Apure.

PARAGUAY, an extensive government of Buenos Ayres, bounded by Chiquitos, Chacos, and Tucuman, on the north-west and west; by the lake of Xarayes on the north; on the north-east and east by the Portuguese territories; and on the south-east and south by the Parana, which separates it from the missions of Guaira in Buenos Ayres, its jurisdiction ending in the south of the city of Assumption, in 26° 48' S. lat.; and it is divided from Tucuman by the river Paraguay.

The great geographical features of this country are its numerous rivers, lakes, swamps, plains, and woods. The most noted of its rivers are the Paraguay, the Parana, the Porudos, Mbotely, Tobati, Ipane, Piray, in the north; and in the south the Canabe and the Tibiquari. These, in the rainy season, overflow their banks, the ground being flat to the extent of several hundred miles; the inundation spreads into lakes which are of great superficial extent, but little depth. When it subsides large tracts which have been submerged become extremely fertile. The climate in general is moist and temperate, though in some parts it is cold, and white frosts are common in July and August. All kinds of grain, the sugar-cane, beans, peas, melons, cucumbers, and European vegetables, abound in the more fruitful parts; asparagus is found wild, and there is a remarkably fine sort of vine, of which a good wine is made: tobacco and cinchona, or Jesuits' bark; sarsaparilla; rhu-barb; jalap; sassafras; guaiacum; cupay, whose oil is used in medicine; nux vomica; vanilla; cacao, the cedar; the curi or pine, from whose red knots, which contain a varnish, the Indians make images; the algarrobo, or carob tree, which is converted into bread; and the Paraguay tea or matte, a plant which rises about a foot and a half high, with slender branches, and leaves like those of senna, are also found here. This last herb grows about 100 leagues from the capital. The gathering and preparing it consists in drying the leaves, which are scattered on shelves for the purpose over a fire, when they are crumbled into a rough dust, and then put up into packages of from seven to eight arrobas, each arroba weighing 25 lbs. The consumption

of this article, not only in these provinces, but in those of Peru and Chili, is incredible; there is scarcely any person who does not take an infusion of it two or three times in the course of the day, making an infusion of it like tea, with warm water and sugar; the mines would stand still, it is said, if the owners were to neglect to supply the workmen with it. It is infused and made nearly in the same way as Chinese tea, excepting that the branches are put in with the leaves. The pomegranate, fig, lemon, and orange, also flourish in Paraguay. The native fruits include the jujuba, chanar, yacani, quabira (from which candles are made for the churches), the delicious quembe, the mammon, resembling a melon, and growing on the trunk of a tree; the anguay, whose pips, of a rich violet color, and triangular shape, are used by the Indians for necklaces; the bacoba, banana, anana, manioc, the cotton tree, which grows here to a great size, &c. &c.; indigo, cochineal, nacalic, whose beautiful yellow is much used by dyers; and reeds of great size, besides a great number of other useful trees and plants; and an immense variety of beautiful flowers. The largest bird is the cassowary or American ostrich, which is remarkable for its fine plumage and swift motions. Of the humming bird there are nine species. In the woods are also hares, rabbits, partridges, wild boar, deer, &c.; but from the great quantity of neat cattle, the flesh of which is preferred, none of these animals are hunted. In the lakes and shores of the river geese are taken in great numbers. They are enlivened likewise by nightingales, goldfinches, parrots of most beautiful plumage, peacocks, and birds of prey, amongst which there is one called tuca, resembling the crow, but having a beak the length of a hand, and beautifully variegated with red, yellow, and black streaks. The most ferocious animal of Paraguay is the jaguar or tiger, which commits great havoc amongst the cattle, and often attacks man. The puma couga, or the American lion, is a fierce animal, but not to be compared to the African lion; and the black bear is also large and ferocious. The tapir or river cow, the water pig or capibara, the cavies, and various other amphibious animals, frequent the numerous streams; and mosquitoes, with an innumerable variety of insects and snakes, are the plague both of the waters and the land. It is estimated that there are twenty kinds of serpents, of which the rattle-snake is the most common. The great boa constrictor is also found adjoining the rivers. In some parts the vampire bat, seizing on a person asleep, sucks the blood, so as to endanger the life of its victim. There is also a species of butterfly whose bite causes a corroding humor to appear, which forms a nidus for a little worm, that leaves behind an unseemly wound, of tedious cure.

The commerce of this country, chiefly carried on by the river Paraguay, consists in the export of its tea, tobacco, cotton, sugar, tallow, wax, honey, hides, cattle, horses, mules, wool, and leather. The journey to Buenos Ayres by land is seldom performed except by couriers, who are exposed to the attacks of the wandering Indians, even the navigation of the Great river:

not being free from them: on the west are the Tobas and Moscobies, on the south the Abipones, on the north the Guaycurus or Mbayas, and the Panaguas; but the east is free from any close neighbours of this description, though on the distant mountains in this quarter called Yerva, are the Monteses, who give great trouble to the people employed to collect the matti. These unsubdued Indians frequently attack the settlements, which has obliged the inhabitants to form a militia to repel their aggressors; there are also nineteen forts in Paraguay in number, generally near the river, which is furnished with guard boats. The number of Indian villages of the missions was of late considerable; they consist of stone or mud houses, covered with tiles, having a large square, in which is the priest's house, and a good church, the number of inhabitants varying from 500 or 600 to 2000.

Paraguay, after being discovered by Sebastian Cabot in 1526, was governed by Juan de Ayalas, to whom Don Pedro de Mendoza, the first governor of Buenos Ayres, gave a commission, a body of troops, military stores, and other necessities; afterwards, by his orders, Juan de Salinas founded the city of Assumption, the capital. In subjugating this country the Spaniards, under Alvarez Nunes, exercised great cruelty on the inhabitants, and regularly parcelled them out as slaves. To supply workmen for the Spanish plantations, Parana was afterwards conquered; the city of Ciudad Real was founded; and 40,000 Indians were reduced to slavery. In 1556 the Jesuits made their first appearance here, and succeeded by gentleness and policy in reducing many of the natives under the yoke of civilised life. Their success indeed in this benevolent work was astonishing; and it is only to be regretted that the whole order has not been thus employed. They established native towns and villages, which soon under their influence and direction spread over the wilderness: their principal missions were not, however, in Paraguay, but in Buenos Ayres, south of the Parana. When the order was abolished, Spanish South America was divided into governments, and other priests were appointed to succeed them in their administration here. See AMERICA, SOUTH. The population of Paraguay was estimated some time since at 97,480 Indians, Spaniards, or whites, of which the latter do not form much more than a twentieth part. The only important towns are the capital Assumption, Villa-Rica, Curugauty, Concepcion, and Neembucu.

PARAGUAY, a river of South America, which gives name to the above province, and of which the sources are little known. Mr. Mawe fixes them in lat. 13° S., after which it runs a course of about 1800 miles, and enters the ocean at the Rio de la Plata.

PARAGUAY, or PARAGUAY TEA TREE, in ootany, a tree which grows naturally in the above country, and is extremely useful both as food and medicine. It is a middle-sized tree, resembling an orange tree and tasting like mallows. The leaves are the part chiefly used. The natives make three gatherings annually; first, of the buds, before they unfold into leaves: these are reckoned best, but

soonest decay: second, of the full grown leaves, at their first expansion: and third, of the leaves, when they have remained on the tree for some time after they are fully blown. These leaves are roasted, and kept in pits under ground for sale. Quantities to the value of £100,000 are annually exported to Peru and Chili. These trees grow naturally in the morasses on the east bank of the Paraguay; but are now dispersed and cultivated all over the country. The leaves are thus used; being dried and reduced almost to powder, they are put into a cup, with sugar and lemon juice; boiling water is then poured on, and the infusion drunk. They are said to be of service in all disorders of the head, breast, and stomach; to allay hunger, and to purify all kinds of water; to preserve the miners from the noxious effect of the minerals; and to be a sovereign remedy in scurvy and putrid fevers. Mr. Llex ranks this tree as a species of Ilex. See ILEX.

PARAIBA, a province of Brasil, bounded north by the river Grande, east by the Brazilian Sea, south by the province of Itamarca, and divided from it by the river Paraiba. The climate is mild, and the soil fertile; and it abounds more than any other province in Brasil wood. The French took possession of it till the year 1584, when they were driven out by the Portuguese. There are many sugar houses in this province.

PARAIBA, the capital of the above province, is situated on the south bank of the river of the same name, about ten miles from the sea, the river being navigable for a considerable way above. It is a handsome and healthy town, defended by three forts. The cathedral is an elegant edifice. The exports consist chiefly of sugar, dyeing woods, and drugs. Population 4000.

PARAIBA, a large river of the above province, which rises in the mountains of the interior, and at its mouth forms the great bay of Paraiba. Its shores are covered with villages and sugar houses. Also a large river of Brasil, in the province of Rio Janeiro, which has its source in the mountains of the province of St. Paul. After a very winding course of 150 miles it enters the province of Rio Janeiro, and, pursuing the same irregular direction, it enters the Atlantic in lat. 21° 34' 30" S.

Mr. Caldcleugh gives us an amusing picture of the country on the banks of this river; and some valuable particulars of its productions. 'After many ascents and descents, over a soil of a deep brick-dust color, we arrived,' says he, 'on the bank of the Rio Paraiba. Near it I observed many rounded waterworn masses of green-stone, but I could discover none in situ. Some gneiss appeared very considerably inclined. On the opposite, or left bank, the register-office is built, where all mules and passengers arriving from the mines are closely examined for diamonds and gold dust, two articles strictly prohibited. The commandant had a guard of twelve soldiers, and an armed boat, which rowed up and down at night, to prevent any persons crossing the river, in this place about 100 yards across. The current is rapid, about seven miles an hour,

and the water cool, being twelve degrees under the temperature of the air, which was 80°. After exhibiting my portaria, or license to travel, I left the registro of the Paraiba, and immediately commenced a long and painful ascent. The road was excessively bad, being extremely narrow, with a gully down the centre; and the soil, being a red clay, was very insecure from the humidity. From the summit, the views on all sides were magnificent; but more particularly the one which extended along the valley of the Paraiba. Here and there the eye caught a glimpse of the river glistening amidst the deepest and most luxuriant vegetation. My tropeiro brought me some pieces of the Quina or Bark, and pointed out many trees. It was extremely bitter, and is, I have no doubt, as good a febrifuge as the Peruvian. All those who pass through these woods use it for the teeth and in cases of loss of appetite. This bark is of a higher color than the 'Jesuits', and I presume of a very different species. The track now led down a descent, and afterwards ascended by a zigzag and most laborious road to nearly its former elevation. The heat was intense, and the mules suffered considerably, and drank at every stream. Large masses of undecomposed feldspar rose in places out of the deep red earth. In other spots the soil was a stiff red clay. The thick wood, although boasting of a large proportion of evergreens, showed, at least the highest trees, a wintry appearance.

'We had not long left the Paraiba, when an immense boa constrictor showed himself among the foliage over my head and the tropeiro's. He was playing about, and instantly retired; he was so close to me that I had a good opportunity of examining his length and the dark brown spots with which he was marked, before my mule and the tropeiro's horse descried him, when the former sprung forward, and the latter turned round, and with great difficulty was brought up again to the spot, which he passed in a trembling state. Rosario and Adam were in advance with the mules and the gun, and had seen nothing of the monster. This was the largest boa I ever saw alive, and I should conceive measured sixteen or eighteen feet. Some skins I subsequently measured were of much greater length. They were brought from the sertão, or country not at all traversed; and when tanned formed an excellent boot quite impervious to the wet. Many of the respectable miners wear boots of this description. The heat was so oppressive on this day that we saw few birds: they appeared to have retired to the very depths of the woods. The trees which we passed were of immense height: for, although in many instances they rose from a depth of forty feet below us, they towered as many over our heads. They were chiefly the tree which produces the gum copaiba.

'We proceeded onwards to a rancho called Payal, and thence over the summits of many serras, ascending and descending continually, until seven o'clock in the evening, when we came in sight of and descended to the bank of the *Paraibuna*. The temperature of the water was 71° and of the air 78°. The distance completed this day was about six leagues, but the heat was

so oppressive, and the track, from the repeated ascents and descents, so extremely fatiguing, that the mules arrived at the river in a very exhausted state. After unloading them, we allowed them to lie down or wander about for an hour or two, before we attempted to feed them; but even then they would not touch the Indian corn, and we were at last obliged to add some handfuls of salt, to get them to eat any. Our own chase had been very unfortunate: only one large bird had been killed; but on 'aking off the skin, for the sake of the plumage, the body was evidently too small for supper. A fortunate occurrence obtained us, however, an excellent repast. My man, previous to leaving Rio de Janeiro, bought the old hat of a priest, which, from its very broad flaps, he conceived would be an effectual shelter from the sun. When we came down to the huts of the *Paraibuna*, one of the inhabitants thought he recognised in Rosario a priest who had once said mass there, and, knowing he could procure nothing fit to eat, had a fowl instantly killed, dressed with rice, and sent it to us. In fact, there is little or nothing to be got in these villages; the mule drivers live on feijoes or beans and pork, which they carry with them, and the inhabitants have little more than is sufficient for their own consumption. The land which they take the trouble to cultivate is cropped with Indian corn, and is entirely consumed on the spot. The inhabitants are a mixed race of blacks and mulattoes, and occasionally with a dash of Indian blood. They are chiefly free; they are excessively indolent, as it may be supposed, and do not appear stimulated even by the idea of gain. Their huts are formed of mud, with a covering of broad leaves; the better description have a ceiling formed of split canes, called *taquarra*.

'The registro of the *Paraibuna* is built on the opposite side of the river, and about 100 small huts or houses surround it. The *Paraibuna* flows down from the back of the Serra da Mantiqueira, under the name of the Rio Preto, which is in fact a mere translation of the Indian word *Paraibuna*. Para, river, and ibuna, black. It is here about fifty yards across, and flows with a turbid but rapid current, half a degree farther to the east, where it joins the Paraiba, and their united streams enter the sea under the name of the Southern Paraiba. Its sand is eminently auriferous, and in front of the registro many canoes were at work. By means of a windlass and an iron scoop, the gold washers dredge up into the canoe a portion of the bed of the river, and, when they have procured as much as they can carry, they move to their washing place, which is a kind of platform projecting over the river; the cascallo or gravel and sand is then shovelled into a large trough, and upon it a neighbouring stream is conducted by means of large bamboos. The canoes are very large, and formed out of a single tree. There were usually three blacks in the canoe, and two on the platform, who received a *patach* (320 reis) per diem each, which for five amounted to 1600 reis; and as the daily gain was generally equal to 2200, about ten shillings, there was a balance of 600 reis for the owners of the boat. One of the

patraos informed me that he frequently collected with three boats five or six octavas of gold (seventy-two grains each) in the course of the day. The gold he showed me was fine grained and of good color. The gravel brought up with it consisted chiefly of quartz of a brilliant whiteness, appearing at first like white topazes, rounded cornelians of a yellowish tint with the red, some agates, and aquamarines of a muddy bad color. I obtained from the mass of refuse several specimens of this description, and a few waterworn wine-yellow topazes. On the bank of the river I observed many large masses of ferruginous quartz, destined, perhaps, when the progress of decomposition is completed, to add a small stock of gold to the sands of the stream, from which large quantities have been already obtained.

PARALLAX, *n. s.* Greek *παράλλαξις*. The distance between the true and apparent place of the sun, or any star, viewed from the surface of the earth. See below.

By what strange *parallax* or optick skill

Of vision multiply'd. *Milton's Paradise Regained.*

Light moves from the sun to us in about seven or eight minutes time, which distance is about 70,000,000 English miles, supposing the horizontal *parallax* of the sun to be about twelve seconds.

Newton's Opticks.

PARALLAX, in astronomy, is otherwise defined, the difference between the places of any celestial objects as seen from the surface, and from the centre of the earth at the same instant. See **ASTRONOMY**. The whole effect of parallax is in a vertical direction : for the parallactic angle is in the plane passing through the observer and the earth's centre ; which plane is necessarily perpendicular to the horizon, the earth being considered as a sphere. The more elevated an object is above the horizon, the less is the parallax, its distance from the earth's centre continuing the same. When the object is in the zenith, it has no parallel ; but when in the horizon, its parallax is greatest. The horizontal parallax being given, the parallax at any given altitude may be found by the following rule :—To the logarithmic cosine of the given altitude, add the log. sine of the horizontal parallax ; the sum, rejecting ten from the index, will be the log. sine of the parallax, in altitude. The longitude, latitude, right ascension, and declination of an object, are affected by parallax. The difference between the true and apparent longitudes is called the parallax in longitude ; in like manner, the differences between the true and apparent latitudes, right ascensions, and declinations, are called the parallax in latitude, right ascension, and declination, respectively.—When the object is in the nonagesimal, the parallax in longitude is nothing, but that in latitude is greatest ; and, when the object is in the meridian, the parallax in right ascension vanishes, and that in declination is a maximum. The apparent longitude is greater than the true longitude, when the object is east of the nonagesimal, otherwise less ; and, when the object is in the eastern hemisphere, the apparent right ascension exceeds the true, but is less than the true right ascension when the object is in the western hemisphere. The apparent place of an object is more distant from the ele-

vated poles of the ecliptic and equator than the true place ; hence, when the latitude of the place and elevated pole of the ecliptic are of the same name, the apparent latitude is less than the true latitude, otherwise greater ; and the apparent declination will be less or greater than the true declination, according as the latitude of the place and declination of the object are of the same or of a contrary denomination. The parallaxes in longitude, latitude, right ascension, and declination, in the spheroidat hypothesis, may be found by the following formulæ ; in which *L* represents the latitude of the place, diminished by the angle contained between the vertical and radius of the given place ; *P* the horizontal parallax for that place ; *a* the altitude of the nonagesimal at the given distance ; *d* the apparent distance of the object from the nonagesimal ; *l* λ the true and apparent latitudes of the object ; *D* δ the true and apparent declinations respectively ; and *m* its apparent distance from the meridian. Then *par. in long.* = *P. sine a. sine d, secant l, to radius unity* ; and *par. in lat.* = *P. cosine a. cosine a. cosine l \mp p. cosine d. sine a. sine l*. The sign — is used when the apparent distance of the object from the nonagesimal and from the elevated pole of the ecliptic are of the same affection, and the sign + if of different affection. If the greatest precision be required, the following quantity 0.00000121216. *par. long.* ², sine 2 *l*, is to be applied to the parallax in latitude found as above, by addition or subtraction, as the true distance of the object from the elevated pole of the ecliptic is greater or less than 90°. Again, *par. in right ascen.* = *P. cosine L. sine m. secant D, to radius unity* ; and *par. in declination* = *P. sine L. cosine δ \mp P. cosine L. sine δ , cosine m*. The upper or lower sign is to be used, according as the distance of the object from the meridian and from the elevated pole of the equator are of the same or different affection. Part second of *par. in declination* = 0.00000121216 *par. in right ascen.* ², sine 2 *D* ; which is additive to, or subtractive from part first of the parallax in declination, according as the true distance of the object from the elevated pole of the equator is greater or less than 90°.

PARALLAX is also used to denote the change of place in an object arising from viewing it obliquely with respect to another object. Thus the minute hand of a watch is said to have a parallax when it is viewed obliquely ; and the difference between the instants shown by it, when viewed directly and obliquely, is the quantity of parallax in time.

PARALLAX OF THE EARTH'S ANNUAL ORBIT, is the difference between the places of a planet as seen from the sun and earth at the same instant. The difference between the longitudes of the planet as seen from the sun and earth is called the parallax in longitude ; and the difference between its latitudes is the parallax in latitude.

PAR'ALLEL, *adj., n. s. & }* Fr. *parallèle* ; **PAR'ALLELISM**. [*v. a.*] Gr. *παράλληλος*. Equidistant ; lineally extended in the same direction : hence, having the same tendency ; equal ; like : parallelism is the state of being parallel, or an instance of it.

His life is *parallel*'d
Ev'n with the stroke and line of his great justice.

Shakspeare.

The *parallel* holds in the gainlessness, as well as
laboriousness of the work.

Decay of Piety.

But the time and occasion call my thoughts home-
ward, and invite me rather to spend the rest of my
hours in *paralleling* Israel's blessings, sins, and
threats of judgment with our own.

Bp. Hall.

Such a resemblance of all parts,
Life, death, age, fortune, nature, arts;
She lights her torch at theirs to tell,
And shew the world this *parallel*.

Denham.

The foundation principle of peripateticism is ex-
actly *parallel* to an acknowledged nothing.

Glanville.

Distorting the order and theory of causes perpen-
dicular to their effects, he draws them aside unto
things whereto they run *parallel*, and their proper
motions would never meet together.

Browne.

The Azores having a middle situation between
these continents and that vast tract of America, the
needle seemeth equally distracted by both, and di-
verting unto neither, doth *parallel* and place itself
upon the true meridian.

Id.

The loyal sufferers abroad became subjected to the
worst effect of banishment, and even there expelled
and driven from their flights; so *paralleling* in their
exigencies the most immediate objects of that mon-
ster's fury.

Fell.

The *parallelism* and due proportioned inclination
of the axis of the earth.

More's Divine Dialogues.

In the fire, the destruction was so swift, sudden,
vast, and miserable, as nothing can *parallel* in story.

Dryden.

I *paralleled* more than once our idea of substance
with the Indian philosopher's he-knew-not-what,
which supported the tortoise.

Locke.

Speaking of the *parallelism* of the axis of the earth
I demand, whether it be better to have the axis of the
earth steady and perpetually *parallel* to itself, or to
have it carelessly tumble this way and that way.

Ray on the Creation.

That he stretched out the north over the empty
places, seems to *parallel* the expression of David, he
stretched out the earth upon the waters.

Burnet.

Thou ungrateful brute, if thou wouldst find thy
parallel, go to hell, which is both the region and the
emblem of ingratitude.

South.

Dissensions, like small streams, are first begun,
Scarce seen they rise, but gather as they run;
So lines, that from their *parallel* decline,
More they proceed, the more they still disjoin.

Garth.

When honour runs *parallel* with the laws of God
and our country, it cannot be too much cherished;
but, when the dictates of honour are contrary to those
of religion and equity, they are the great deprivations
of human nature.

Addison.

A reader cannot be more rationally entertained
than by comparing and drawing a *parallel* between
his own private character, and that of other persons.

Id.

In the *parallel* place before quoted.
For works like these, let deathless journals tell,
None but thyself can be thy *parallel*.

Ope.

Who made the spider *parallels* design,
Sure as De Moivre, without rule or line? *Id.*
'Twixt earthly females and the moon,

All *parallels* exactly run.

Swift's Miscellanies.

Compare the words and phrases in one place of an
author, with the same in other places of the same
author, which are generally called *parallel* places.

Watts.

PARALLEL, in geometry. See GEOMETRY.

PARALLEL SPHERE, that situation of the
sphere wherein the equator coincides with the
horizon, and the poles with the zenith and nadir.

PARALLELS OF ALTITUDE, or *ALMUCANTARS*,
are circles *parallel* to the horizon, imagined to
pass through every degree and minute of the
meridian between the horizon and zenith, having
their poles in the zenith.

PARALLELS OF DECLINATION, in astronomy,
are the same with *parallels* of latitude in geo-
graphy.

PARALLELS OF LATITUDE, in astronomy, are
lesser circles of the sphere *parallel* to the eclip-
tic, imagined to pass through every degree and
minute of the colures.

PARALLEL OGRAM, *n. s.* Fr. *parallelo-*
gramme; Gr. *παράλληλος* and *γραμμή*, a figure.
In geometry, a right lined quadrilateral figure,
whose opposite sides are *parallel* and equal.

The experiment we made in a loadstone of a *pa-*
rallelogram, or long figure, wherein only inverting
the extremes, as it came out of the fire, we altered
the poles.

Browne.

We may have a clear idea of the area of a *parallelo-*
ogram, without knowing what relation it bears to the
area of a triangle.

Watts.

PARALLELOPIPED, *n. s.* Fr. *parallelo-*
pipede. A solid figure contained under six *paral-*
lelograms, the opposite sides of which are
equal and *parallel*; or it is a prism, whose base
is a *parallelogram*.

Two prisms alike in shape I tied, so that, their
axes and opposite sides being *parallel*, they composed
a *parallelopiped*.

Newton.

Crystals that hold lead are yellowish, and of a
cubic or *parallelopiped* figure.

Woodward.

PARALLELOPIPEDIA, in the old miner-
alogy, a genus of spars, externally of a deter-
minate and regular figure, always found loose,
detached, and separate from all other bodies, and
in form of an oblique *parallelopiped*, with six
parallelogram sides, and eight solid angles;
easily fissile either in an horizontal or perpendi-
cular direction; being composed of numbers of
thin plates, and those very elegantly and regu-
larly arranged bodies, each of the same form
with the whole mass, except that they are thin-
ner in proportion to their horizontal planes, and
naturally fall into these and no other figures, on
being broken with a slight blow.

PARALOGISM, or *?* Fr. *paralogisme*; Gr.
PARALOGY, *n. s.* *?* *παράλογισμος*. A false
argument.

That because they have not a bladder of gall, like
those we observe in others, they have no gall at all,
is a *paralogism* not admissible, a fallacy that dwells
not in a cloud, and needs not the sun to scatter it.

Browne's Vulgar Errors.

That Methuselah was the longest liver of all the
posterity of Adam, we quietly believe; but that he
must needs be so, is perhaps below *paralogy* to deny.

Browne.

Modern writers, making the drachma less than the
denarius, others equal, have been deceived by a
double *paralogism*, in standing too nicely upon the
bare words of the ancients, without examining the
things.

Arbuthnot.

If a syllogism agree with the rules given for the
construction of it, it is called a true argument: if it

disagree with these rules, it is a *paralogism*, or false argument. *Watts.*

PARALOGISM, in logic, also implies a consequence drawn from principles that are false; or, though true, are not proved; or when a proposition is passed over that should have been proved.

PARALYSIS, *n. s.* Fr. *paralytic*; Gr. *παλυσος*. A palsy. See **MEDICINE**, Index.

PARALYTICAL, or } Palsied; inclined
PARALYTIC, *adj.* } to palsy.

Nought shall it profit, that the charming fair,
Angelick, softest work of heaven, draws near
To the cold shaking *paralytick* hand,
Senseless of beauty. *Prior.*

The difficulties of breathing and swallowing, without any tumor after long diseases, proceed commonly from a resolution or *paralytical* disposition of the parts. *Arbuthnot.*

If a nerve be cut, or straitly bound, that goes to any muscle, that muscle shall immediately lose its motion: which is the case of *paralyticks*. *Derham.*

The temporary motion of a *paralytic* limb is likewise caused by passing the electric shock through it; which would seem to indicate some analogy between the electric fluid and the nervous fluid, which is separated from the blood by the brain, and thence diffused along the nerves for the purposes of motion and sensation. *Darwin.*

PARAMARIBO, a handsome town of Guiana, the capital of the province of Surinam, is situated on the right bank of the Surinam river, about eighteen miles from its mouth. It is about a mile and a half in length, and about half as much in breadth, and built in the form of an oblong square. The streets, which are straight, are lined with orange, shaddock, tamarind, and lemon trees, which appear in perpetual bloom. It is generally crowded with planters, sailors, soldiers, Jews, Indians, and negroes, while the river is constantly covered with barges and canoes. The town-hall, Protestant church, Lutheran chapel, and Jewish synagogue, are all respectable buildings. Here is a citadel of some strength, separated by an esplanade from the town. Inhabitants 5000.

PARAMATTA, a town of New Holland, situated above the head of Port Jackson harbour, and built along a small stream that falls into the river which terminates in that arm of the sea. Its distance from Sydney is about twelve miles by land, and eighteen by water; but, for the last six or seven miles, the river can only be navigated by boats. The town consists principally of a single street, about a mile long, and is much inferior to Sydney in point of building, though it contains several good houses. These, with the church, the government house, the new orphan house, and some gentlemen's seats situated on the surrounding eminences, give it a respectable appearance. There are likewise two good inns. Here is also a factory, where the female convicts who are found unfit for servants are employed in manufacturing coarse cloth. The population consists principally of inferior traders, publicans, artificers, and laborers; and, including the soldiers stationed there, may be estimated at about 1200 individuals. Benevolence, too, has taken up her residence there, and one of the institutions

that first claims the attention of the philanthropist, is the school that was established a few years since for the instruction of the aborigines. It lately contained nearly twenty children of the natives, who had been voluntarily placed there by their parents, and whose progress in their studies was found to be not inferior to that of European children of the same age.

A superintendent receives wool from the settlers, and gives them a certain portion of the manufactured article in exchange. What is reserved is only a fair equivalent for the expense of making it, and is used in clothing the jail gang, the reconvicted culprits who are sent to the coal river, and the inmates of the factory. This town has made but a slow progress compared with the town of Sydney; and the value of land in its neighbourhood is consequently not so great by any means. In 1818 there were cleared in the district of this name 13,302 acres of land, containing 10,429 head of cattle, 33,673 sheep, 745 horses, and 3960 hogs.

PARAMITHIA, a considerable town of Albania, Greece, the capital of a district of nearly forty miles in circumference, inhabited by a rude tribe, mostly of the Mahometan religion; but their language is Greek. They have hardly any regular government, but are a brave race, to which, joined to the mountainous and inaccessible nature of their country, they owe the independence they enjoy. They are said to amount to 15,000. Nineteen miles south-west of Joannina.

PARAMO (Lewis de), a Spanish inquisitor who published at Madrid, in 1598, a curious work upon the tribunal called The Holy Office. He writes with candor, omits no fact, but enumerates impartially all the victims of the Inquisition.

PARAMOUNT, *adj.* Fr. *paramount*; or par and mount. Superior; having the highest jurisdiction: as, lord paramount, the chief of the seignior: taking to before the object.

Leagues within the state are ever pernicious to monarchies; for they raise an obligation, *paramount* to obligation of sovereignty, and make the king, *tantum unus ex nobis*. *Bacon.*

John a Chamber was hanged upon a gibbet raised a stage higher in the midst of a square gallows, as a traitor *paramount*; and a number of his chief accomplices were hanged upon the lower story round him. *Id.*

The dogmatist's opinioned assurance is *paramount* to argument. *Glanville.*

In order came the grand infernal peers,
'Midst came their mighty *paramount*. *Milton.*

If all power be derived from Adam, by divine institution, this is a right antecedent and *paramount* to all government; and therefore the positive laws of men cannot determine that which is itself the foundation of all law. *Locke.*

Mankind, seeing the apostles possessed of a power plainly *paramount* to the powers of all the known beings, whether angels or demons, could not question their being inspired by God. *West.*

PARAMOUNT, in English law, the highest lord of the fee of lands, of tenements, and hereditaments. As there may be a lord mesne where lands are held of an inferior lord, who holds them of a superior under certain services; so this su-

perior lord, is lord paramount. Also the king is the chief lord, or lord paramount, of all the lands in the kingdom. *Cok. Lit. 1.*

PARAMOUR, *n. s.* Fr. *par amour*: *par amore*. A lover or wooer.

For in this world n'is dogge for the bows,
That can hurt dere from an hole yknowe,
Bet than this Sompnour knew a slie lechour,
Or an avouter or a *paramour*.

Chaucer. Cant. Tales.

Upon the floor
A lovely bevy of fair ladies sat,
Courtod of many a jolly *paramour*,
The which them did in modestwise amate,
And each one sought his lady to aggrate.

Spenser.

Shall I believe
That unsubstantial death is amorous,
And that the lean abhorred monster keeps
Thee here in dark to be his *paramour*? *Shakespeare.*

No season then for her

To wanton with the sun her lusty *paramour*.

Milton.

PARANA, a river of South America, which rises in Brasil, in the province of Matto Grosso, and, after a long and winding course, falls into the Paraguay, in lat. 27° 25' S., when the united stream assumes the name of the Plata. In lat. 24° it passes over a ledge of rocks that has been denominated a cataract, but it does not materially obstruct the navigation, as boats are hauled up it by means of ropes. The base of this fall is formed by a chain of rocks that rise in separate masses, and leave channels, like embrazures, for the stream. The Parana is here very wide, and, when swelled by the rains, very rapid. In the lower part of its course the Parana is covered with numerous islands, which conceal its immense breadth. Many of these islands are covered with trees; but none are inhabited except by wild animals. The Parana has its greatest flood in December, January, and sometimes in February; and there is another inundation in June and July. The river at these times rises from eighteen to twenty feet above the level of the islands; and the animals with which they abound then swim over to the main land. On some occasions the inhabitants of Santa Fe have contemplated forsaking their city, which is often wholly surrounded with water.

PARANAIBA, a large river of Brasil, which runs S.S.E. for many leagues, and enters the Parana near its source.

PARANAIBA, a river of Guiana, an arm of the Amazons, running out from and returning to it, and enclosing the large island of Ramos.

PARANAPURAS, a river of Quito, which rises in the Andes, and enters the Guallaga. Also the name of a settlement on this river.

PARANYMPH, *n. s.* Fr. *paranymphe*; Gr. *παρά* and *νύμφη*, a bride. A bride-man; one who leads the bride to marriage.

The Timnian bride

Had not so soon preferred

Thy *paranymp* worthless to thee compared,

Successor in thy bed.

Milton's Agonistes.

Sin hath got a *paranymp* and a solicitor, a warrant and an advocate. *Taylor's Worthy Communicant.*

PARANYMPH, among the ancients, the person who waited on the bridegroom, and directed the

nuptial solemnities; called also *pronubus* and *auspex*, because the ceremonies began by taking auspicia. As the *paranymp* officiated only on the part of the bridegroom, a woman called *pronuba* officiated on the part of the bride.

PARAPEGM, *n. s.* Gr. *παράπηγμα, παράπηγμα*. A brazen table fixed to a pillar, on which laws and proclamations were anciently engraved: also a public table, containing an account of the movements of the heavenly bodies, seasons of the year, &c., whence the astrologers give this name to the tables on which they draw their figures.

Our forefathers, observing the course of the sun, and making certain mutations to happen in his progress through the zodiack, set them down in their *parapegms*, or astronomical canons. *Browne.*

PARAPET, *n. s.* Fr. *parapet*; Ital. *parapetto*. A wall breast high.

There was a wall or *parapet* of teeth set in our mouth to restrain the petulancy of our words.

Ben Jonson.

The *parapet* of the covert-way is what covers that way from the sight of the enemy; which renders it the most dangerous place for the besiegers, because of the neighbourhood of the faces, flanks, and curtains of the place. *James.*

PARAPET, in fortification, an elevation of earth designed for covering the soldiers from the enemy's cannon or small shot. See **FORTIFICATION**.

PARAPHERNA'LIA, *n. s.* Fr. *parapher-naux*; Lat. *paraphernalia*. Goods in the wife's disposal.

Paraphernalia, or *parapherna*, in the civil law, are those goods which a wife brought her husband, besides her dower, and which were still to remain at her disposal, exclusive of her husband, unless there was some provision made to the contrary in the marriage-contract.

Dr. A. Rees.

PARAPHRASE, *n. s. & v. a.*

PARAPHRAST, *n. s.*

PARAPHRAS'TIC, or

PARAPHRAS'TICAL, *adj.*

Fr. *para-phrase*; Gr.

παραφρασις.

A free or lax interpretation; an explanation in many words: to *paraphrase* is, to interpret or translate loosely. a *paraphrast*, a lax interpreter: the adjectives follow these senses.

The fittest for public audience are such as, following a middle course between the rigor of literal translators and the liberty of *paraphrasts*, do, with great shortness and plainness, deliver the meaning.

Hooker.

The clearest and shortest way of explication is by *paraphrase*.

Bp. Hall.

We are put to construe and *paraphrase* our own words, to free ourselves from the ignorance and malice of our adversaries.

Stillingfleet.

In *paraphrase*, or translation with latitude, the author's words are not so strictly followed as his sense, and that too amplified, but not altered: such is Mr. Waller's translation of Virgil's fourth *Æneid*.

Dryden.

What needs be *paraphrase* on what we mean? We were at worst but wanton; he's obscene. *Id.*

All the laws of nations were but a *paraphrase* upon this standing rectitude of nature, that was ready to enlarge itself into suitable determinations, upon all emergent objects and occasions.

South.

The Chaldean *paraphrast* renders Gerah by Meath.

Arbuthnot.

Where translation is impracticable, they may *paraphrase*.—But it is intolerable that, under a pretence of *paraphrasing* and translating, a way should be suffered of treating authors to a manifest disadvantage. *Felton on the Classics.*

PARAPHIRENITIS, *n. s.* *Fr. paraphrenesie*; *Gr. παρα φρενιτις*, phrenzy.

Paraphrenitis is an inflammation of the diaphragm. The symptoms are a violent fever, a most exquisite pain increased upon inspiration, by which it is distinguished from a pleurisy, in which the greatest pain is in expiration. *Arbuthnot.*

PARAPHYMO'SIS disorders. See **MEDICINE** and **SURGERY**.

PARARA, an Anglo-American word, used in the Northern United States, for what is called in the Southern States a savannah, i. e. an extensive rich plain, without trees, but covered with grass. Some of these are forty miles broad, and several hundred miles long; and exhibit fine prospects.

PARASANG, *n. s.* *Barb. Lat. parasanga*. A Persian measure of length.

Since the mind is not able to frame an idea of any space without parts, instead thereof it makes use of the common measures, which, by familiar use, in each country, have imprinted themselves on the memory; as inches and feet, or cubits and *parasangs*. *Locke.*

The **PARASANG** is an ancient measure, differing at different times, and in different places; being usually thirty, sometimes forty, and sometimes fifty stadia, or furlongs. The word, according to Littleton, has its rise from *parasch angarias*, *q. d.* the space a postman rides from one station, *angaria*, to another.

PARASCENIUM, in the Grecian and Roman theatres, was a place behind the scenes whither the actors withdrew to dress and undress themselves. The Romans more frequently called it **Postcenium**. See **THEATRE**.

PARASELENE, in natural philosophy, a mock moon; a meteor or phenomenon encompassing or adjacent to the moon, in form of a luminous ring; wherein are observed sometimes one and sometimes two or more images of the moon.

PARASEMON, *Παρασημον*, among the Greeks, was the figure carved on the prow of the ships to distinguish them from each other. This figure was generally that of a bull, lion, or other animal; sometimes the representation of a mountain, tree, flower, &c.

PARASITE, *n. s.* } *Fr. parasite*; *Lat. parasitic*, *adj.* } *sita*; *Gr. παρα και σιτρος*, *PARASIT'ICAL.* } bread. A flatterer at one's table; one that earns his welcome at table by flattery.

He is a flatterer,
A *parasite*, a keeper back of death,
Who gently would dissolve the bands of life,
Which false hopes linger. *Shakspeare.*

Most smiling, smooth, detested *parasites*,
Courteous destroyers, affable wolves, meek bears,
You fools of fortune. *Id.*

Diogenes, when mice came about him, as he was eating, said, I see that even Diogenes nourisheth *parasites*. *Bacon.*

O, your *parasite*
Is a most gracious thing, dropped from above;

Not bred 'mongst clods, and clod-polls here on earth.
I muse; the mystery was not made a science,
It is so liberally profest. *Ben Jonson.*

Some *parasitic* preachers have dared to call those martyrs, who died fighting against me.

King Charles.
The bishop received small thanks for his *parasitic* presentation. *Hakewell on Providence.*

Thou, with trembling fear,
Or like a fawning *parasite*, obeyed;
Then to thyself ascribest the truth foretold. *Milton.*

The people sweat not for their king's delight,
T' enrich a pimp, or raise a *parasite*. *Dryden.*

PARASITE, among the ancient Greeks, was originally a very reputable title; the *parasites* being a kind of priests, at least ministers, of the gods, in the same manner as the *epulones* were at Rome. They took care of the sacred corn, or the corn destined for the service of the temples and the gods, viz. sacrifices, feasts, &c. They had even the intendance over sacrifices; and took care that they were duly performed. At Athens there was a kind of college of twelve *parasites*; each people of Attica furnishing one, who was always chosen out of the best families. Polybius adds, that a *parasite* was also an honorable title among the ancient Gauls, and was given to their poets.

PARASOL, *n. s.* *Fr. parasol* (from *sol*, the sun); *Ital. parrasole*. A small canopy or umbrella carried over the head, to shelter from rain and the heat of the sun.

It is made of leather, taffety, oil cloth, &c., mounted on a stick, and opened or shut at pleasure, by means of pieces of whalebone that sustain it. The East Indians never stir without a *parasol*. *Dr. A. Rees.*

PAR'BOIL, *v. a.* *Fr. parbouiller*. To half boil; boil in part.

Parboil two large capons upon a soft fire, by the space of an hour, till, in effect, all the blood be gone. *Bacon.*

From the sea into the ship we turn,
Like *parboiled* wretches, on the coals to burn. *Donne.*

PAR'BREAK, *v. n. & n. s.* *Belg. brecker*; *Teut. verbrecke*. To vomit. Obsolete.

Her filthy *parbreak* all the place defiled has. *Spenser.*

PARBUNCLE, in a ship, a rope almost like a pair of slings; it is seized both ends together, and then put almost double about any heavy thing that is to be hoisted in or out of the ship; having the hook of the runner hitched into it, to hoist it up by.

PARCÆ, in heathen mythology, goddesses who were supposed to preside over the accidents and events, and to determine the date or period of human life. The *Parcæ* were three, *Clotho*, *Lachesis*, and *Atropos*. They spun the thread of men's lives; *Clotho* held the distaff and drew the thread; *Lachesis* twirled the spindle, and spun it; and *Atropos* cut it. The ancients represent the *Parcæ* divers ways: *Lucian*, in the shape of three poor old women, having large locks of wool, mixed with daffodils on their heads. Others represent *Clotho* in a long robe of divers colors, wearing a crown upon her head adorned with seven stars; *Lachesis* in a robe

beset with stars; and Atropos clad in black. The ancients imagined that the Parcae used white wool for a long and happy life, and black for a short and unfortunate one.

PAR'CEL, *n. s. & v. a.* Fr. *parcelle*; Barb. Lat. *particula*. A small bundle; small part of a whole; any small quantity: to parcel is, to divide out into parts or portions; also (obsolete) to make up into a mass.

And they set themselves in the midst of that parcel, and delivered it, and slew the Philistines.

1 Chron. xi. 14.

This youthful parcel

Of noble batchelors stand at my bestowing.

Shakespeare.

What a wounding shame, that mine own servant should parcel the sum of my disgraces by addition of his envy!

Id.

Women, Silvius, had they marked him
In parcels, as I did, would have gone near
To fall in love with him.

Id.

An inventory thus importing

The several parcels of his plate, his treasure,
Rich stuffs and ornaments of household.

Id.

This is to drive a wholesome trade, when all other petty merchants deal but for parcels.

Decay of Piety.

Those ghostly kings would parcel out my power,
And all the fatness of my land devour.

Dryden.

They came to this conclusion; that unless they could, by a parcel of fair words and pretences, engage them into a confederacy, there was no good to be done.

L'Estrange.

With what face could such a great man have begged such a parcel of the crown lands, one a vast sum of money, another the forfeited estate?

Davenant.

If they allot and parcel out several perfections to several deities, do they not, by this, assert contradictions, making deity only to such a measure perfect? whereas a deity implies perfection beyond all measure.

South.

What can be rationally conceived in so transparent a substance as water for the production of these colours, besides the various sizes of its fluid and globular parcels?

Newton.

The same experiments succeed on two parcels of the white of an egg, only it grows somewhat thicker upon mixing with an acid.

Arbutnot.

I have known pensions given to particular persons, any one of which, if divided into smaller parcels, and distributed to those who distinguish themselves by wit or learning, would answer the end.

Swift.

PARCELLES (John), PARCELLES (Julius), two eminent Flemish painters of the seventeenth century, father and son, who excelled in painting sea-pieces.

PAR'CENER, *n. s.* } In common law.

PAR'CENARY. }

When one dies possessed of an estate, and having issue only daughters, or his sisters be his heirs; so that the lands descend to those daughters or sisters; these are called parceners, and are but as one heir: hence parcenary, from Fr. *parsonier*, is holding or occupying of land by more persons pro indiviso, or by joint tenants, otherwise called co-parceners; for if they refuse to divide their common inheritance, and choose rather to hold it jointly, they are said to hold in parcinarie.

PARCH, *v. a.* From Gr. *περκαυσω*, says Junius; from *percoquo* (Skinner), 'perhaps,' adds Dr. Johnson, 'from *perustus*, burnt, or from

parchment, the effect of fire upon parchment being almost proverbial.' To scorch; burn, slightly or superficially; dry up.

The parched ground shall become a pool.

Isaiah xxxv. 5.

Hath thy fiery heart so parcht thine entrails,
That not a tear can fall?

Shakespeare.

Did he so often lodge in open field,
In winter's cold, and summer's parching heat,
To conquer France?

Id. Henry IV.

Torrid heat,

And vapours as the Libyan air adust,
Began to parch that temperate clime.

Milton.

I'm stupified with sorrow, past relief
Of tears; parch'd up and withered with my grief.

Dryden.

The Syrian star

With his sultry breath infects the sky;
The ground below is parched, the heavens above us fry.

Id.

Without this circular motion of our earth, one hemisphere would be condemned to perpetual cold and darkness, the other continually roasted and parched by the sun beams.

Ray.

If, to prevent the acrospiring, it be thrown thin,
many corns will dry and parch into barley.

Mortimer.

Full fifty years

I have endured the biting winter's blast,
And the severer heats of parching summer.

Rowe.

A man distressed with thirst in the parched places of the wilderness, searches every pit, but finds no water.

Rogers.

The skin grows parched and dry, and the whole body lean and meagre.

Blackmore.

PARCH'MENT, *n. s.* Fr. *parchemin*; Latin *Pergamena*, *charte*. Skins dressed for writing. The skins of sheep are, in particular, called parchment; those of calves vellum.

I have mo things to write to you, and I wolde not bi parchemyn and enke, for I hope I schal come to you and speke mouth to mouth that youre ioie be ful.

Wiclif. 2 Jon.

Is not this a lamentable thing, that the skin of an innocent lamb should be made parchment; that parchment being scribbled over, should undo a man?

Shakespeare. Henry VI.

In the coffin, that had the books, they were found as fresh as if newly written, being written in parchment, and covered with watch candles of wax.

Bacon.

Like flying shades before the clouds we shew,
We shrink like parchment in consuming flame.

Dryden.

PARCHMENT, the skins of sheep and goats prepared for writing upon, covering books, &c. The word comes from the Latin *Pergamena*, the ancient name of this manufacture, which is said to have been taken from the city of Pergamos, to Eumenes, the king of which, its invention is usually ascribed; though, in reality, that prince appears rather to have been the improver than the inventor of parchment. For the Persians of old, according to Diodorus, wrote all their records on skins; and the ancient Ionians, as we are told by Herodotus, made use of sheep skins and goat skins in writing. The manufacture of parchment is begun by the skinner, and finished by the parchment-maker. The skin being stripped of its wool and placed in the lime-pit;

norance of it; and so passing all his days in the disconsolate, uneasy vicissitudes of hopes and fears, at length go out of the world, not knowing whither he goes.

South.

A blind man sitting in the chimney corner is *pardonable* enough, but sitting at the helm, he is intolerable.

Id.

I have sent you the history of my mind on this subject without any disguise: if it does not please you, *pardon* it at least, for it is the truth.

Cowper.

PARDON, in criminal law, is the remitting an offence committed against the king. His power of pardoning was said by our Saxon ancestors to be derived à lege sive dignitatis: and it is declared in parliament, by stat. 27 Hen. VIII. c. 24, that no other person has power to pardon or remit any treason or felonies whatsoever; but that the king hath the whole and sole power thereof united and knit to the imperial crown of this realm. In democracies there is no power of pardoning. The king may pardon all offences merely against the crown or the public; excepting, 1. That, to preserve the liberty of the subject, the committing any man to prison out of the realm, is by the habeas corpus act, 31 Car. II. c. 2, made a præmunire, unpardonable even to the king. Nor, 2, can the king pardon where private justice is principally concerned in the prosecution of offenders: Non potest rex gratiam facere cum injuria et damno aliorum. Therefore, in appeals of all kinds (which are the suit, not of the king, but of the party injured), the prosecutor may release, but the king cannot pardon. Neither can he pardon a common nuisance, while it remains unredressed, or so as to prevent an abatement of it; though afterwards he may remit the fine: because, though the prosecution is vested in the king to avoid the multiplicity of suits, yet (during its continuance) this offence savours more of the nature of a private injury to each individual in the neighbourhood, than of a public wrong. Neither, lastly, can the king pardon an offence against a popular or penal statute, after information brought; for thereby the informer hath acquired a private property in his part of the penalty. There is also a restriction of a peculiar nature that affects the prerogative of pardoning, in case of parliamentary impeachments, viz. that the king's pardon cannot be pleaded to any such impeachment, so as to impede the enquiry and stop the prosecution of great and notorious offenders. In the reign of Charles II., when the earl of Danby pleaded the king's pardon, the commons voted, 'That a pardon is not pleadable in bar of an impeachment.' And it was enacted by the act of settlement, 12 & 13 W. III. c. 2, 'That no pardon under the great seal of England shall be pleadable to an impeachment by the commons in parliament.' But, after the impeachment has been solemnly heard and determined, it is not understood that the king's royal grace is farther restrained or abridged: for, after the impeachment and attainder of the six rebel lords in 1715, three of them were from time to time reprieved by the crown; and at length received the king's most gracious pardon. The effect of such pardon by the king is, to make the offender a new man; to acquit him of all corporal penalties and forfeitures annexed to that offence for which he obtains his

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pardon; and not so much to restore his former, as to give him new credit and capacity. But nothing can restore or purify the blood when once corrupted, if the pardon be not allowed till after attainder, but the high and transcendent power of parliament. Yet if a person attained receives the king's pardon, and afterwards has a son, that son may be heir to his father; because the father, being made a new man, might transmit new inheritable blood; though, had he been born before the pardon, he could never have inherited at all. See **KING**.

PARE, *v. a.* } Fr. *parer*; Lat. *paro*. De-
PA'RING, *n. s.* } duced by Skinner from the
French '*parer les ongles*,' to dress the horses' hoofs when they are shaved by the farrier: thus we first said, *pare* your nails; and from thence transferred the word to general use. To cut off extremities; to cut away by little and little; diminish. If *pare* be used before the thing diminished, it is followed immediately by its accusative; if it precedes the thing taken away, or agrees in the passive voice with the thing taken away, as a nominative, it requires a particle, as *away*, off: a *paring* is that which is *pared* off; the *rind*.

And thou shalt bring her home to thine house; and she shall shave her head and *pare* her nails.

Deut. xxi. 12.

The creed of Athanasius, and that sacred hymn of glory, than which nothing doth sound more heavenly in the ears of faithful men, are now reckoned as superfluities, which we must in any case *pare* away, lest we cloy God with too much service.

Hooker.

I am a man, whom fortune hath cruelly scratched. — 'Tis too late to *pare* her nails now.

Shakspeare.

I have not alone
Employed you where high profits might come home;
But *pared* my present havings to bestow
My bounties upon you.

Id. Henry VIII.

The lion moved with pity, did endure,
To have his princely paws all *pared* away.

Shakspeare.

Virginity breeds mites, much like a cheese; and consumes itself to the very *paring*.

Id.

The king began to *pare* a little the privilege of clergy, ordaining that clerks convicted should be burned in the hand.

Bacon's Henry VII.

Pick out of tales the mirth, but not the sin,
He *pares* his apple, that will cleanly feed.

Herbert.

A hone and a *parer*, like sole of a boot,
To *pare* away grasse, and to raise up the root.

Tusser.

Whoever will partake of God's secrets must first look into his own, he must *pare off* whatsoever is amiss, and not without holiness approach to the holiest of all holies.

Taylor.

The most poetical parts, which are description and images, were to be *pared away*, when the body was swoln into too large a bulk for the representation of the stage.

Dryden.

In May, after rain, *pare off* the surface of the earth, and with the *parings* raise your hills high, and enlarge their breadth.

Mortimer.

All the mountains were *pared off* the earth, and the surface of it lay even, or in an equal convexity every where with the surface of the sea.

Burnet.

The sword, as it was justly drawn by us, so can it scarce safely be sheathed, till the power of the great

2 P.

troubler of our peace be so far *pared* and reduced, as that we may be under no apprehensions.

Aiterbury.

'Twere well if she would *pare* her nails. *Pope.*

To his guest, tho' no way sparing,
He eat himself the rind and *paring*. *Id.*

PARÉ (Ambrose), an eminent French surgeon of the sixteenth century, born at Laval in Maine. He was surgeon to several kings of France. Being a Protestant he would have been involved in the massacre of St. Bartholemew's day, had not Charles IX. himself shut him up in his chamber, saying, 'a man so useful to all the world ought not to perish in such a manner.' He died at an advanced age, in 1590.

PARÉ, or PARENS (David), D. D., a celebrated Protestant divine, born in 1548, at Francolstein, in Silesia. He studied at Hemsburg under the learned Christopher Schilling; afterwards at Heidelberg, under Zach. Ursin. He was much patronised by Albert Kindler, and prince Casimir; was admitted minister of Schlettenbach in 1571; afterwards of Hemsbach, in Worms, where, in 1574, he married the sister of John Stibelius; in 1577 he became minister of Ogersheim; and in 1584 professor in the college of Heidelberg. In 1591 he was admitted D. D., and in 1602 succeeded Tossanus as professor of divinity. He published, 1. The German Bible, with notes, at Neustadt, in 1589; 2. A Commentary on the Epistle to the Romans; 3. Several tracts against Bellarmin and the Jesuits: with other polemical pieces; and died at Pareanum in 1622.

PARÉ (Philip), son of the preceding, was born at Hemsbach in 1576; studied at Neustadt and Heidelberg; became eminent for grammatical erudition; and, under the patronage of the elector palatine, visited the universities of Basil in 1599, and Geneva in 1600. He became rector of Neustadt College in 1612; principal of that of Hanau in 1645; published his father's life and exegetical works in 1647; several tracts on grammar; with commentaries on the Scriptures, and other theological works.

PARÉ (Daniel), son of Philip, was also eminent for classical learning, and particularly for his skill in the Greek language. He published many learned pieces; particularly *Museus's Hero* and *Leander*, with notes; *Mellificium Atticum*, a selection from Greek Authors, &c. He was murdered by robbers in 1645.

PARÉJA (John), an eminent painter, born in the West Indies, and originally a slave to Diego Velasquez, a celebrated painter. He acquired the art by studying it privately, without his master's knowledge. Philip IV. one day visiting Velasquez's museum, discovered his merit and gave him his liberty; yet his attachment to Velasquez was so strong that he continued with him till his death. His portraits are equal to those of Velasquez. He died in 1670, aged sixty.

PARÉIRA FRAYA, in the materia medica, a kind of oblong and large root brought from Brasil.—It is a diuretic of no mean character, and has done great service in nephritic cases. In pleurisies and quinsies it has been attended with more success than almost any medicine we know of singly.

PARÉLCON, in grammar, a figure by which a word or syllable is added to the end of another.

PARÉMBOLE, in rhetoric, a figure wherein something relating to the subject is inserted in the middle of a period. All the difference between the *parembole* and the *parenthesis*, according to Vossius, is, that the former relates to the subject in hand, whereas the latter is foreign to it.

PARÉNCHYM'ATOUS, or } From *paren-*
PARÉNCHYMOUS, *adj.* } *chyma*. Greek

παρεγχυμα, a spongy or porous substance; in physis, a part through which the blood is strained: relating to the *parenchyma*; spongy.

Ten thousand seeds of the plant hart's-tongue, hardly make the bulk of a pepper-corn. Now the covers and true body of each seed, the *parenchymatous* and *ligneous* parts of both moderately multiplied, afford an hundred thousand millions of formed atoms in the space of a pepper-corn. *Grew.*

Those parts, formerly reckoned *parenchymatous*, are now found to be bundles of exceedingly small threads. *Cheyne.*

PARÉNCHYMA, in anatomy, is a term introduced by Erisistratus signifying all that substance which is contained in the interstices betwixt the blood-vessels of the viscera, which he imagined to be extravasated and concreted blood.

PARÉNCHYMA OF PLANTS. Grew applies this term to the pith or pulp, or that inner part of a fruit or plant through which the juice is supposed to be distributed.

PARENT (Anthony), as Dr. Watkins calls him, or Unsoine, according to others, a mathematician, born at Paris in 1666. He showed an early propensity to mathematics. At fourteen he was put under a master, who taught rhetoric at Chartres. Here he saw a dodecahedron upon every face of which, except the lowest, was delineated a sun-dial. Struck with the curiosity of these dials, he attempted drawing one himself. He then undertook to write a Treatise upon Gnomonics, and a book of Geometry. His friends then sent for him to Paris to study the law; but these studies were no sooner finished than he returned to mathematics. He then took pupils; and, fortification having attracted particular notice, he turned his attention to it, and made two campaigns with the marquis of Aligre, by which he instructed himself in viewing fortified places; of which he drew a number of plans. M. de Billettes, being admitted in the Academy of Sciences at Paris in 1699, as their mechanician, nominated, for his disciple, Parent, who excelled chiefly in this branch. Though his abilities were acknowledged, yet his impetuosity of temper provoked opposition; and he rose no higher than assistant member for geometry. He enjoyed this promotion but a short time; for he was taken off by the small pox the same year, 1716, aged fifty. He was author of many pieces, chiefly on mechanics and geometry.

PAR'ÉNT, *n. s.* } Fr. *parent*; Lat. *parens*.
PAR'ÉNTAGE, } A father or mother: pa-
PARÉNTAL, *adj.* } rentage is birth; extraction;
condition by birth: parental, pertaining to, or becoming a parent.

All true virtues are to honour true religion as their parent, and all well ordered commonweals to love her as their chiefest stay. *Hooker.*

A gentleman of noble *parentage*,
Of fair dameans, youthful and nobly allied.
Shakespeare.

Though men esteem thee low of *parentage*,
Thy father is the eternal king.
Milton.
It overthrows the careful course and *parental* pro-
vision of nature, whereby the young ones, newly ex-
cluded, are sustained by the dam.
Brown.

His custom was, during the warmer season of the
year, to spend an hour before evening-prayer in
catechising; whereat the *parents* and elder sort were
wont to be present.
Fell.

As a public *parent* of the state,
My justice, and thy crime, requires thy fate.
Dryden.

To his levees go,
And from himself your *parentage* may know. *Id.*
In vain on the dissembled mother's tongue
Had cunning art, and sly persuasion hung;
And real care in vain and native love
In the true *parent's* panting breast had strove.
Prior.

We find him not only boasting of his *parentage*, as
an Israelite at large, but particularizing his descent
from Benjamin.
Atterbury.

These eggs hatched by the warmth of the sun into
little worms, feed without any need of *parental* care.
Derham.

Young ladies, on whom *parental* controul sits
heavily, give a man of intrigue room to think that
they want to be parents.
Clarissa.

So thou, sweet rose-bud, young and gay,
Shalt beauteous blaze upon the day,
And bless the *parent's* evening ray
That watched thy early morning.
Burns.

Sorrow has, since they went, subdued and tamed
The playful humor; he could now endure
(Himself grown sober in the vale of tears),
And feel a *parent's* presence no restraint.
Cowper.

'Tis the most asinine employ on earth,
To hear them tell of *parentage* and birth,
And echo conversations dull and dry,
Embellished with—He said, and so said I. *Id.*

On cliff he hath been known to stand,
And rave as to some bloody hand
Fresh severed from its *parent* limb,
Invisible to all but him,
Which beckons onward to his grave,
And lures to leap into the wave.
Byron.

PARENT AND CHILD. The law of England
on this subject may be divided into the *duties*
and *authority* of parents, first, as to their legiti-
mate children; secondly, their illegitimate
children; and, lastly, the duties of children to
their parents, and their rights and incapacities.

SECT. I.—OF THE DUTY OF PARENTS TO THEIR LEGITIMATE CHILDREN, AND THEIR AU- THORITY.

A legitimate child is he that is born in lawful
wedlock, or within a competent time afterwards.
Pater est quem nuptiæ demonstrant is the rule
of the civil law, and which holds whether the
nuptials happen before or after the birth of the
child. But in the English law the rule is nar-
rowed; for the nuptials must be precedent to the
birth, of which we shall further treat in the
second section.

1. *Maintenance.* It is a principle of the
English law that there is an obligation on every
man to provide for his children, and the manner
in which this obligation shall be performed is
thus pointed out by various statutes. The father

and mother, grandfather and grandmother, of poor
impotent persons shall maintain them at their
own charge, if of sufficient ability, according as
the quarter sessions shall direct; and, if a parent
runs away and leaves his children, the church-
wardens and overseers of the parish shall seize
his rents, goods, and chattels, and dispose of
them towards their relief. By the interpreta-
tions which the courts of law have made upon
these statutes, it is said by Blackstone that if a
mother or grandmother marries again, and was
before such second marriage of sufficient ability
to keep the child, the husband should be charged
to maintain it; for this, being a debt of hers when
single, should like others extend to charge the
husband. But at her death, the relation being
dissolved, the husband was under no further obli-
gation. The statute upon which the construc-
tion is here given is 43 Eliz. c. 2; but it has
since been determined that this statute extends
to relations by blood only, and not those by affi-
nity, and that, therefore (contrary to the position
in the commentaries), a man is not bound to
maintain the children of his wife by a former
husband. See *Rex, v. Munden*, 1 Stra. 190;
Tubb, v. Harrison, 4 Term Rep. 118. No per-
son is, however, bound to provide a maintenance
for his issue, unless where the children are im-
potent and unable to work either through infancy,
disease, or accident, and then is only obliged to
find them necessaries, the penalty on refusals being
no more than 20s. a month.

A late statute, the 5 Geo. IV. c. 83, provides
that persons, being able but wilfully neglecting
to work to support their families, whereby they
become chargeable to the parish, shall be deemed
idle and disorderly, and be punishable by im-
prisonment and hard labor, not exceeding a
month. Every person running away and leaving
his wife or child chargeable shall also be
deemed a rogue and vagabond. The wages of
seamen and other persons in public employments
who abscond from their families, as well as the
allowance of Greenwich pensioners, are applica-
ble for the maintenance of their children under
the provisions of 59 Geo. III., c. 12.

2. *Protection* is a duty rather permitted than
enjoined by any municipal laws, nature in this
respect working so strongly as to need rather a
check than a spur. A parent may, by our laws,
maintain and uphold his children in their law-
suits without being guilty of the legal crime of
maintaining quarrels. A parent may also justify
an assault and battery in defence of the persons
of his children.

3. *Education.* The last duty of parents to
their children is that of giving them an education
suitable to their station in life: a duty pointed
out by reason, and of far the greatest importance
of any. Our laws, though defective in this par-
ticular, have in one instance made a provision
for training the rising generation: since the poor
and laborious part of the community, when past
the age of nurture, are taken out of the hands of
their parents by the statutes for apprenticing
poor children. The rich, however, are left at
their own option whether they will breed up
their children to be the ornaments or disgrace of
their family.

4. The *authority* or power of parents over their children is derived from the former consideration, their duty: this authority being given them partly to enable the parent more effectually to perform his duty, and partly as a recompense for his care and trouble in the faithful discharge of it. He may lawfully correct his child, being under age, in a reasonable manner; for this is for the benefit of his education. The consent or concurrence of the parent to the marriage of his child under age was also directed by our ancient law to be obtained, but now it is absolutely necessary, for without it the contract is void. A father has no more power over his son's estate than as his trustee or guardian; for though he may receive the profits during the child's minority, yet he must account for them when he comes of age. He may indeed have the benefit of his children's labor while they live with him; but this is no more than he is entitled to from his apprentices or servants. The legal power of a father (for a mother as such is entitled to no power, but only to reverence and respect), over the persons of his legitimate children, ceases at the age of twenty-one, for they are then enfranchised by arriving at years of discretion, or that point which the law has established (as some must necessarily be established), when the empire of the father or other guardian gives place to the empire of reason. Yet till that age arrives this empire of the father continues even after his death; for he may by his will appoint a guardian to his children. He may also delegate part of his parental authority during his life to the tutor or schoolmaster of his child, who is then in loco parentis, and has such a portion of the power of the parent committed to his charge, viz. that of restraint and correction, as may be necessary to answer the purposes for which he is employed.

SECT. II.—OF ILLEGITIMATE CHILDREN, AND THE LIABILITY AND AUTHORITY OF THEIR PARENTS.

1. *Who are deemed illegitimate.* A bastard, by our English law, is one that is not only begotten but born out of lawful matrimony. The civil and canon laws do not allow a child to remain a bastard if the parents afterwards intermarry. But whether they are to be considered as legitimate from the time of the marriage of their parents only, or whether their legitimacy has relation back to the time of their birth, is a point variously disputed by the civilians and canonists; the prevailing opinion seems to be that they are to be considered as legitimate from the time of their birth to all purposes, but those in which to consider them as such would operate to the detriment of a third person (Co. Lit. 233, n. 1); and herein they differ most materially from our law, which, though not so strict as to require that the child shall be begotten, yet makes it an indispensable condition to make it legitimate that it shall be born after lawful wedlock. All children, therefore, born before matrimony, are bastards by our law; and so it is of all children born so long after the death of the husband that, by the usual course of gestation, they could not be begotten by him. But, this being a matter of some uncertainty, the law is not

exact to a few days. See Co. Lit. 123 n. (1 and 2). And this gave occasion to a proceeding at common law, where a widow is suspected to feign herself with child in order to produce a supposititious heir to the estate. In this case the heir presumptive may have a writ de ventre inspiciendo to examine whether she be with child or not, and if she be to keep her under proper restraint till delivered; but if the widow be, upon due examination, found not pregnant, the presumptive heir shall be admitted to the inheritance, though liable to lose it again on the birth of a child within forty weeks from the death of the husband; but if a man dies and his widow soon after marries again, and a child is born within such a time as that by the cours: of nature it might have been the child of either husband, in this case he is said to be more than ordinarily legitimate; for he may, when he arrives at the years of discretion, choose which of the fathers he pleases. Co. Lit. 8. But this doctrine is questioned by Brooke, from which it seems as if he thought it reasonable that the circumstances of the case, instead of the choice of the issue, should determine who is the father. Supra. n. (7); and see Co. Lit. 123, latter part of n. (1).

As bastards may be born before the coverture or marriage state is begun, or after it is determined, so also children, born during wedlock, may in some circumstances be bastards. As if the husband be out of the kingdom of England (or, as the law somewhat loosely phrases it, extra quatuor maria) for above nine months, so that no access to his wife can be presumed, her issue during that period shall be bastards. But generally during the coverture access of the husband, it is said, shall be presumed, unless the contrary can be shown, which is such a negative as can only be proved by showing him to be elsewhere. Subsequent decisions, however, have relaxed this rule; and it is now held to be unnecessary that proof should be adduced of the non access of the husband; the modern practice (if not the more ancient, see 1 Salk 123, Stra. 925, 3 P. Wms. 276) being to leave it to the jury to decide, under all the circumstances of the case, whether access may reasonably be presumed to have been had or not. 4 Term. Rep. 25. Ibid. 366. In a divorce, a mensâ et thoro, if the wife breeds children they are bastards, for the law will presume the husband and wife conformable to the sentence of separation, unless access be proved; but, in a voluntary separation by agreement, the law will suppose access, unless the negative be shown. So also, if there be an apparent impossibility of procreation on the part of the husband, as if he be only eight years old, or the like, there the issue of the wife shall be bastard. Likewise in case of divorce in the spiritual court, a vinculo matrimonii, all the issue born during the coverture are bastards, because such divorce is always upon some cause that rendered the marriage unlawful and null from the beginning.

2. *Of the liability of parents for their illegitimate children.*—The method in which the English law provides maintenance for them is as follows:—When a woman is delivered, or declares herself

with child, of a bastard, and will by oath, before a justice of peace, charge any person as having got her with child, the justice shall cause such person to be apprehended, or appear at the next quarter sessions, to dispute and try the fact. But if the woman dies, or is married before delivery, or miscarries, or proves not to have been with child, the person shall be discharged; otherwise the sessions, or two justices out of the sessions, upon original application to them, may take order for the keeping of the bastard by charging the mother or the reputed father with the payment of money or other sustentation, for that purpose. And if such putative father or lewd mother run away from the parish, the overseers, by direction of two justices, may seize their rents, goods, and chattels, in order to bring up the bastard child. Yet such is the humanity of our laws that no woman can be compulsively questioned concerning the father of her child till one month after delivery, which indulgence is, however, frequently a hardship upon parishes by giving the parents opportunity to escape.

Besides the expense of maintenance the father is liable, by 49 Geo. III. c. 68, to the expenses of the accouchement, with the costs of apprehending, and order of filiation, not exceeding £10, and subject to the discretion of the magistrates or quarter sessions. The order must be made by two justices or more. By the same statute, a justice may commit the father to jail for three months, to hard labor, if he refuse to pay without sufficient cause. An appeal against the order of filiation must be made to the next sessions, and ten days previous notice given to the justices and overseers. If the father agree to indemnify the parish, the security given is vested in the overseers, who may sue as such. The parish however is only entitled to indemnify for actual expense; and if a sum be paid, in gross, as a discharge for the liability, and the child should die, or cease to be a burthen before the sum is expended, the father may recover back the difference; the reason for which is that otherwise it would be the interest of the parish to neglect the child, against which the law thus humanely provides.

3. *Of the power of the parents as to illegitimate children.*—Though the father of a legitimate child is entitled to the custody of it, the mother is preferred to the putative father of an illegitimate child; and if the putative father of a bastard obtain possession of it by fraud, the court will order it to be restored on the application of the mother. 5 Term Reports 278.

SECT. III.—OF THE DUTIES OF CHILDREN: AND THEIR RIGHTS AND INCAPACITIES.

1. The duties of children to their parents arise from a principle of natural justice and retribution; for to those who gave us existence we naturally owe subjection and obedience during our minority, and honor and reverence ever after. They who protected the weakness of our infancy are entitled to our protection in the infirmity of their age; they who, by sustenance and education, have enabled their offspring to prosper, ought in return to be supported by that offspring in case they stand in need of assistance. Upon

this principle proceed all the duties of children to their parents which are enjoined by positive laws. The law does not hold the tie of nature to be dissolved by any misbehaviour of the parent, and therefore a child is equally justifiable in defending the person or maintaining the cause or suit of a bad parent as a good one; and is equally compellable, if of sufficient ability, to maintain and provide for a wicked and unnatural progenitor as for one who has shown the greatest tenderness and parental duty. Dr. Brown, it seems, was inclined to think, contrary to the opinion of lord Holt, that a grandchild is not compellable to relieve an indigent grandfather; but, according to professor Christian, there seems no doubt that the court of king's bench would determine the duty to be reciprocal, and would construe any ambiguous expression in favor of the discharge of such a natural and moral obligation.

2. Our law has made no provision to prevent the *disinheriting of children* by will: leaving every man's property in his own disposal upon a principle of liberty in this as well as every other action. Heirs, however, and children are favorites of our courts of justice, and cannot be disinherited by any dubious or ambiguous words, there being required the utmost certainty of the testator's intentions to take away the right of an heir.

3. *Of the rights and incapacities of bastards.*—The rights of a bastard are few, being only such as he can acquire; for he can inherit nothing, being looked upon as the son of nobody, and sometimes called *filius nullius*, sometimes *filius populi*. Yet he may gain a surname by reputation, though he has none by inheritance. All other children have their primary settlement in their father's parish, but a bastard in the parish where born, for he has no father. However in cases of fraud, as if a woman be sent either by order of justices, or comes to beg as a vagrant to a parish which she does not belong to, and drops her bastard there, the bastard shall in the first case be settled in the parish whence she was illegally moved, or in the latter case in the mother's own parish, if the mother be apprehended for her vagrancy. Bastards also born in any licensed hospital for pregnant women are settled in the parishes to which the mothers belong.

4. The *incapacity* of a bastard consists principally in this, that he cannot be heir to any one, neither can he have heirs but of his own body; for, being *nullius filius*, he is therefore of kin to nobody, and has no ancestor from whom any inheritable blood can be derived. By the common law it is held that a bastard is incapable of holding any ecclesiastical benefice.

In all other respects there is no distinction between a bastard and another man. A bastard may lastly be made legitimate and capable of inheriting by the transcendent power of an act of parliament, and not otherwise, as was done in the case of John of Gaunt's bastard children by a statute of Richard II.

PARENTALIA, in antiquity, funeral obsequies, or the last duties paid by children to their deceased parents.

PARENTHESIS, *n. s.* Fr. *parenthese*; Gr.

κατα ἐν τῷ ἑνὶ. A sentence so included in another, as that it may be taken out, without injuring the sense of that which encloses it: and commonly marked thus, ().

In vain is my person excepted by a *parenthesis* of words, when so many are armed against me with swords. *King Charles.*

But to return from my *parenthesis.* *Barrow.*

In his Indian relations are contained strange and incredible accounts; he is seldom mentioned without a derogatory *parenthesis*, in any author. *Broune.*

Thou shalt be seen,

Tho' with some short *parenthesis* between,

High on the throne of wit. *Dryden.*

Don't suffer every occasional thought to carry you away into a long *parenthesis*, and thus stretch out your discourse, and divert you from the point in hand. *Watt's Logic.*

PARENTHESIS is defined by others, certain intercalary words inserted in a discourse, which interrupt the sense, but seem necessary for the better understanding of the subject. But this is not a definition of the parenthesis, but of the sentences included in it. Dr Johnson's is strictly accurate. The parentheses are often misapplied by authors and printers, by being made to enclose words at the end of a sentence, where they are quite unnecessary, and still more, when they are made to enclose clauses without which the sentence is incomplete.

PARENTIUM, an ancient sea-port town of Istria; (*Plin.* iii. c. 19).

PARER'GY, *n.s.* Gr. *παρά* and *εργον*, a work. Something unimportant; something done by the bye.

Scripture being serious, and commonly omitting such *parergies*, it will be unreasonable to condemn all laughter. *Broune.*

PAREISIS, in medicine, a palsy of the bladder, wherein the urine is either suppressed or discharged involuntarily.

PARETONEUM, in mineralogy, an earth found on the shores of Egypt, Cyrene, and Crete, used by the ancients in painting. It had its name either from a part of Egypt, near which it was gathered, or from a town in that kingdom, where it was usually sold. Vitruvius is of the first opinion, and Volaterrus of the last. Of late it was thought to be lost; but it is still common on the shores of most of the islands of the Archipelago, though not observed or regarded; and is truly a very heavy and tough clay, of a fine white color, found in masses of different sizes, generally as soft as the softer clays within the strata; and, by rolling about on the beach in this state, it gathers up the sand, small shells, and other foulnesses we always find about it. It is likely there are strata of it fine and pure in the cliffs there, and that the sea washes off masses of them in storms and high tides, which are what we find.

PARFAIT (Francis), a French dramatic writer, born at Paris in 1698. He wrote a tragedy entitled *Atrée*, and a comedy called *Panurge*; but his greatest work was a General History of the French Theatre, from its origin to his own time, in 15 vols. 12mo. He died in 1753, aged fifty-five.

PARFRE (John), an old dramatic writer of England, of whom nothing is recorded, except

that he wrote a piece, entitled *Candlemas Day* or the Killing of the children of Israel; a mystery; 1512; republished in Mrs. Hawkins's Collection of Old Plays, in 1773.

PARGA, a strong sea-port town on the coast of Albania, opposite the southern point of the island of Corfu. It was first built on the present rocky site on the decline of the Roman empire, near the Achem of ancient history, and has a double harbour, defended by a battery. The citadel commands a noble prospect. It has often been independent.

In 1401 it entered into an alliance with Venice, which continued to 1797. While independent of Ali Pacha it was an asylum to all the refugees of Albania and Greece: but in 1798 he reduced Bucintoro, Prevesa, and the other fortified places on the adjacent coast. Parga alone bade defiance to him. In 1814 he marched against it with a military force: the Pargiots withstood the attack, but applied to the British in Corfu, and received a garrison from them, in the hope of being incorporated with the new republic of the Ionian islands. To this, however, the British government did not give countenance; and ultimately Ali, paying a pecuniary indemnity to those of the inhabitants who should refuse to remain, obtained the transfer of the island. This compensation was so large (about £200,000 sterling) that hardly any of the Pargiots chose to submit to the tyrant; and the evacuation took place in 1819, most of them removing to the Ionian Islands. Thirty miles south-west of Joannina.

PARGET, *n.s.* Fr. *pargette*. Plaster laid upon roofs of rooms.

Gold was the *parget*, and the ceiling bright
Did shine all scaly with great plates of gold;
The floor with jasp and emerald was dight. *Spenser.*

There are not more arts of disguising our corporeal blemishes than our moral; and yet, while we thus paint and *parget* our own deformities, we cannot allow any the least imperfection of another's to remain undetected. *Government of the Tongue.*

Of English talc, the coarser sort is called plaster or *parget*: the finer, spald. *Woodward.*

PARGET, in mineralogy, a name giving to several kinds of gypsum, or plaster stone.

PARGETING, in building, is used for the plastering of walls, and sometimes for plaster itself. Pargeting is of various kinds: as, 1. White lime and hair-mortar laid on bare walls. 2. On bare laths, as in partitioning and plain ceiling. 3. Renewing the insides of the walls, or doubling partition walls. 4. Rough-casting on heart-laths. 5. Plastering on brick-work with finishing mortar, in imitation of stone-work; and the like upon heart-laths.

PARHE'LION, *n.s.* Gr. *παρά* and *ἥλιος*. A mock sun. See below.

To neglect that supreme resplendency that shines in God for those dim representations of it, that we so doat on in the creature, is as absurd, as it were for a Persian to offer his sacrifice to a *parhelion*, instead of adoring the sun. *Boyle.*

PARHELIUM, or **PARHELION**, formed from *παρά* near, and *ἥλιος*, sun, in physiology, a mock sun or meteor, being a part of the heavens strongly illuminated by the image of the sun, and appearing like another sun, but often color-

ed and drawn out to a considerable length, in the form of a tail.

The parhelia usually accompany the coronæ, or luminous circles, and are placed in the same circumference, and at the same height. Their colors resemble those of the rainbow; the red and yellow are on the side towards the sun, and the blue and violet on the other. Though there are coronæ sometimes seen entire, without any parhelia; and sometimes parhelia without coronæ.

The apparent size of parhelia is the same as that of the true sun; but they are not always round, nor always so bright as the sun; and, when several appear, some are more bright than others. They are tinged externally with colors like the rainbow, and many of them have a long fiery tail opposite to the sun, but paler towards the extremity. Some parhelia have been observed with two, and others with three tails. These tails appear for the most part in a white horizontal circle, which generally passes through all the parhelia; and, if it were entire, would go through the centre of the sun. Sometimes there are arcs of lesser circles, concentric to this, touching these colored circles which surround the sun. They are also tinged with colors, and contain other parhelia. Parhelia are generally situated in the intersections of circles; but Cassini says that those which he saw, in 1683, were on the outside of the colored circle, though the tails were in the circle that was parallel to the horizon. M. Épinus apprehends that parhelia with elliptical coronæ are more frequent in the northern regions, and those with circular ones in the southern. They have been visible for one, two, three, and four hours together; and in North America they are said to continue some days, and to be visible from sun-rise to sun-set. When the parhelia disappear, it sometimes rains, or there falls snow in the form of oblong spiculæ, as Maraldi, Weidler, Krafz, and others, have observed; and because the air in North America abounds with such frozen spiculæ, which are even visible to the eye, according to Ellis and Middleton, such particles have been thought to be the cause of all coronæ and parhelia.

Parhelia are sometimes double, triple, &c.

Aristotle observes that two were seen in the Bosphorus from morning to evening; though in general, he observes, they are not seen, except when the sun is near the horizon. Pliny relates under what consults this phenomenon was ever seen at Rome.

In the year 1629 was seen at Rome, by Scheiner, a parhelion of four suns, and the same number was seen by M. Muschenbroeck at Utrecht; Gassendi says that in 1635 and 1636 he often saw one mock sun; in 1661 Hevelius observed at Dantzic one of seven suns; and in 1666 another was seen at Arles, of six.

Phenomena of this kind have also been observed by M. de la Hire at Paris, in 1689, and by M. Cassini, in 1693; by Mr. Grey, in 1700; by Halley, in 1702; and Maraldi in 1721.

Aristotle (*Meteor. cap. 3*) was of opinion that rainbows, halos, and mock suns, were all occasioned by the reflection of the sun beams in dif-

ferent circumstances, by which an imperfect image of his body was produced, the color only being exhibited, and not his proper figure. The image, he says, is not single, as in a mirror; for each drop of rain is too small to reflect a visible image; but the conjunction of all the images is visible. See OPTICS.

PARIA, a province of Buenos Ayres, formerly included in Peru, is bounded on the north by Pacajes, on the north-east by Oruro, east and south-east by Porco, south-west by Lipes, and west by Caranjas. It takes its name from a lake along the border of which it extends, and which is also called Paria, though more commonly Chucuito. It is cold and produces little grain, but abundant pasture, and cattle of all kinds are plentiful. It contains salt and silver mines, saline lakes, and hot springs. The cheese made of sheep's milk is esteemed a delicacy. Population 10,000.

PARIA, the capital of the above province, is 210 miles north-west of La Plata.

PARIA, GULF OF, a gulf of South America, in the Caraccas, which has on the east the island of Trinidad, and on the west the province of Cumana. From these two lands on the north, two points jut out, with two islands intervening, which leave four openings, called the Mouths of the Dragon, by which the gulf communicates with the Carribean Sea. This gulf is twenty-five leagues from east to west, and fifteen from north to south: there is anchorage in all that extent, but its depth varies from eight to thirty fathoms. Upon the coast of Paria its soundings are less. It has a muddy bottom, except near the coast of Terra Firma, where there are shoals and sand banks. It receives on the S. S. W. the different mouths of the Orinoco, which enters it with a velocity that very much incommodes the vessels which steer that way; and they discharge themselves into the Carribean Sea by the Mouths of the Dragon, which it is therefore impossible to enter, especially the small ones, unless highly favored by the winds: and it is at least as difficult to enter the gulf on the south as on the north. The wind must be south-east to be able to enter with any certain prospect of safety. The tide is not only perceptible, but even formidable in the gulf of Paria, where it discovers a violence not to be conceived by those who are not well acquainted with this sea. There are several ports and roads along the coast which greatly facilitate the communication with Trinidad.

PARIAN CHRONICLE. See ARUNDELIAN MARBLES. Under that article we have given the arguments for and against the authenticity of the Parian Chronicle, as fully as the subject seemed to require, or as the nature of our work would admit. Such of our readers, however, as wish for further information on this subject, we must refer to Robertson's attack, and to Gough's Learned and Judicious Vindication of their authenticity, published in *Archæologia* for 1789. The extent of his learning, and the solidity of his arguments, appear upon the whole to outweigh the objections of his sensible and plausible opponent, and the accession of persons to this side of the argument gives it no small additional weight.

Hewlett's book upon the same side of the question is also ingenious.

PARIAN MARBLE, in the natural history of the ancients, the white marble used then, and to this day, for carving statues, &c.; and called by us at this time statuary marble. Too many of the later writers have confounded all the white marbles under the name of the Parian; and, among the workmen, this and all the other white marbles have the common name of alabasters; so that it is in general forgotten among them, that there is such a thing as alabaster different from marble; which, however, is truly the case. Almost all the world also have confounded the Carrara marble with this, though they are really very different; the Carrara kind being of a finer structure and clearer white than the Parian; but less bright and splendid, harder to cut, and not capable of so glittering a polish. The true Parian marble has usually somewhat of a faint bluish tinge among the white, and often has blue veins in different parts of it. It is supposed by some to have had its name from the island Paros (see **PAROS**), where it was first found; but others will have it to have been so called from Agoratrius Parius, a famous statuary, who ennobled it by cutting a statue of Venus in it.

PARIAS, or **PERREAS**, a degraded tribe of Hindoos, who live by themselves in the outskirts of towns: and, in the country, build their houses apart from the villages, or rather have villages of their own. They dare not in cities pass through the streets where the Brahmins live; nor enter a temple of the superior castes. They get their bread by sowing, digging, and building the walls of mud houses; most of those inhabited by the common people being raised by the Parias; who perform all kinds of menial work: their diet is also wretched. One would scarcely imagine that contentions for precedence should ever occur among a people who seem to have renounced all cleanliness, and who are held in such utter contempt by the rest of the Hindoos; yet pride has divided the Parias into two classes: the first simply called Parias, the other Seriperes.

PARI'ETAL, *adj.* Lat. *paries*. Constituting the sides or walls.

The lower part of the *parietal* and upper part of the temporal bones were fractured. *Sharp.*

PARIETALIA OSSA. See **ANATOMY**.

PARIETARIA, pellitory of the wall; a genus of the monœcia order, and polygamia class of plants: natural order fifty-third, scabridæ: hermaphrodite **CAL.** quadrifid: **COR.** none; there are four stamina; one style; and one seed, superior and elongated: **FEMALE CAL.** quadrifid: **COR.** none: nor are there any stamina. There is one style; and one seed superior and elongated. Species six, of which the

P. officinalis is used in medicine. This has a creeping root. The stalk grows erect, is rough to the touch, and adhesive. The leaves are alternate, elliptical, lanceolate, veined, and a little rough. The flowers grow out of the axæ of the leaves, in sessile, branched, verticillate clusters, of a greenish color tinged with red. The anthers have a great degree of sensibility; for, if irritated with the point of a pin, they fly from

the calyx with elastic force, and throw out their powder. The plant has a cooling and diuretic quality. Three ounces of the juice taken internally, or a fomentation externally applied, have been found serviceable in the strangury. The plant, laid upon heaps of cotton infested with weevils, is said to drive away those destructive insects.

PARIETES, in anatomy, a term used for the enclosures or membranes that stop up or close the hollow parts of the body; especially those of the heart, the thorax, &c. The parietes of the two ventricles of the heart are of unequal strength and thickness; the left exceeding the right, because of its office, which is to force the blood through all parts of the body; whereas the right only drives it through the lungs.

PARIMA, a lake of Guiana, in the interior. It was formerly reported by travellers to be 100 miles long and fifty broad, with an island in the middle, of glittering mica, the celebrated seat of El Dorado, the imaginary city whose streets were paved with gold. It is now, however, said to be nothing more than an overflow of some of the head branches of the Parima or Branco. Long. 45° 20' W., lat. 3° 40' N.

PARIMA, or Branco, a river of South America, which rises in the above lake, and running south for above 400 miles, and collecting the waters of several other rivers, enters by four mouths the Rio Negro.

PARINA-COCHAS, a province of Peru, bounded on the north by the province of Aimaraes, north-west by that of Valcas-huaman, east by that of Chimbivilcas, south by that of Arequipa, and west by that of Lucanas. It is thirty-five leagues long, and of irregular breadth. The situation is elevated and cold, with the exception of some hollows among the Andes. Here numerous breeds of cattle, particularly sheep, are found, and the mountains abound in mines of silver and gold, and herds of Guanucus or Peruvian camels; most of the inhabitants of this part, therefore, are drovers or woollen manufacturers. It contains thirty settlements, and 11,000 inhabitants.

PARINA-COCHA, a lake in the above province, seven leagues long and one broad.

PARINI (Joseph), a modern Italian poet, was the son of a poor peasant, and born on the shores of Lake Pusiano, about seven leagues from Milan. The monks bestowed on him a gratuitous education, to fit him for a subordinate ecclesiastical office; but a thirst for learning induced him to acquire farther knowledge; until his prospects of promotion in the church were blasted by an attack of paralysis in his nineteenth year. This rendered him a cripple for life. He at first was obliged to struggle through nearly twenty years of obscurity and indigence to procure the means of support for himself and his widowed mother; but a sudden change in his fortunes was produced by the appearance of his fine satirical work, *Il Giorno*, intended to exhibit a humorous delineation of the Milanese nobility. He was also the author of several lyric compositions, which display the same strain of moral satire. Towards the close of his life he enjoyed a large share of popularity. Once when the democratic spirit ran high, and the people

were tumultuously assembling at Milan: with cries of 'Viva la Repubblica! Morti ai Tiranni, ai Patrizii!' Parini issuing forth from a hotel exclaimed, 'Viva la Repubblica, e morte a nes-

suno; canaglia stolta.' 'The republic for ever, and death to nobody, you stupid people.' He lived much esteemed and respected to his seventieth year.

PARIS.

PARIS, Lutourez, Lutetia, one of the largest, richest, and most flourishing cities of Europe, the capital of the kingdom of France, the seat of the government, and the residence of the king, royal family, and ministers of state. It is locally situated in the Isle of France, department of the Seine, of which it is the chief place. Here are held the meetings of the two chambers of deputies, of the court of cassation, the court of accounts, a royal court for the departments of the Aube, the Eure-et-Loire, the Marne, the Seine-et-Marne, and the Seine; an inferior court of judicature; and a chamber of commerce for twelve cantons and twelve mayoralties; a general court for superintendence of the customs, of waters and forests, of bridges and highways, &c.; a general administration of the post, of exchanges and lotteries; royal manufactories of tobacco; the archives of the kingdom; a royal printing office; a prefecture of the police; the bank of France; a university academy; a school of medicine; an academy of belles lettres; a royal atheneum; a polytechnic school; a military school; a school of the fine arts; an institution for the deaf and dumb; a court of longitude; a society of music; and numerous other learned institutions. Its population is about 717,000.

This city is situated on the two banks of the Seine, in a pleasant valley, overlooked by lofty hills, on the sides of which part of it is built. The river crosses it from east to west, dividing it into two nearly equal parts; it then divides itself into two branches, which unite again after forming three tolerably large islands. The communication between the two banks and the islands is effected by a great number of bridges, some of which are remarkable for the beauty of their construction, and abut upon grand quays, bordered by elegant houses, which have a very imposing appearance. Most of the streets are wide, airy, watered by numerous fountains, and full of magnificent hotels, shops, and warehouses of every description. The pleasantness of the boulevards planted with trees, the numerous public squares adorned with triumphal arches, columns, and statues, the majestic architecture of the public buildings, the beauty of the suburbs, the mildness of the climate, the various manufactures carried on here, the celebrated artists and learned men that reside in it, and the multitude of establishments devoted to the sciences and arts, well combine with its political importance to render Paris a resort of foreigners from all parts of the globe. According to the most recent accounts there are twenty-eight royal roads that meet here, fifty-six barriers, some of them very elegant, eighteen boulevards, thirty-one quays, sixteen bridges, three islands, eighty

squares, 1085 streets, 26,801 houses, thirty-seven public markets, seven of which are under cover, eighty-five fountains, eight public libraries, twelve theatres, seven civil and military prisons, twelve parish churches, thirty-six chapels of ease, three protestant temples, three Jews' synagogues, twenty-four barracks, twenty-six civil hospitals, and four for the military, besides numerous infirmaries. The outer circumference of the boulevards is about twenty-one miles, and the superficial extent 34,396,800 square metres.

Paris was, at the time of the Roman invasion, only a miserable township, built by the Gauls in the island called now the city. It was, however, the capital of the Parisiaci, one of the ninety-eight tribes, of which, according to Julius Cæsar, Celtic Gaul consisted. Struck with the advantages of its situation, Cæsar made himself master of it after a very vigorous resistance. A city was soon raised on the yet smoking ruins of the ancient habitations, which received the name of Lutetia. It considerably increased during the five centuries that the Romans were in possession of it, was the seat of one of the prefectures of Gaul, and at different periods became the temporary residence of several of the Roman emperors, who here built an aqueduct and a palace, the remains of which are visible.

History assigns no date to the foundation of the Gaulish town. The form of government of the tribe settled here was republican: and there is reason to think that this was a numerous people, brave, and jealous of their independence, since they defeated Cæsar's lieutenant Labienus, who was first sent against them; in a second encounter, however, they were not so successful: the courage of their old general Camulogenes was of no avail; he was slain, and thus spared the mortification of seeing his tribe subjugated by the enemy. They afterwards set fire to their capital: but Cæsar caused it, as we have stated, to be rebuilt, surrounded it with walls, and fortified with towers at short intervals. Some of these fortifications were in existence at the time of the siege of the Normans in 885. Its advantageous situation soon made it a place of great trade. About the year 350 a few churches were erected, and, a few years after, Julian, who resided at the palace of Thermes, was there proclaimed emperor by the soldiers. In 380 it began to be called the city of the Parisii, or Paris. It was invaded in 451 by the Franks, under the conduct of Merovée, who drove out Ætius, the last of the Roman governors. At length Clovis, after having accomplished the conquest of the Gauls, fixed upon Paris as the capital of his states. Under Charlemagne learning and science began to flourish here. Left to its own resources, by the feeble successors of this monarch, it was

several times ravaged by the Normans, who began their attacks in 845, set fire to it in 857, and besieged it for three months in 885-6, continued their ravages until the year 910, and finally destroyed even the remains of those monuments which the power of the Romans had erected.

The kings of the third race, wishing to render their capital worthy of a great kingdom, granted to it some important privileges, and executed some splendid works for its embellishment. Under Philip Augustus the foundations of Notre Dame were laid, the streets began to be paved, the city was surrounded with walls, flanked with 500 towers, and augmented by the addition of four new quarters. The establishment of the schools of surgery, and of the Three Hundred, and the enlargement of the Hotel Dieu, were the work of St. Louis. Under Philip the Fair the chamber of accounts and the exchange were established, and Charles the Good added eight new quarters, and built the bridges of St. Michael and Notre Dame. In 1420 Paris was taken by the English, who were forced to evacuate it fifteen years afterwards. The same year a great part of the population was carried off by cold and famine, and in 1438 more than 50,000 of the inhabitants died of famine and the plague; so that troops of hungry wolves, after venting their rage in the country parts, entered the city by means of the river, and committed dreadful devastation. So great was the mortality, owing to the heat of the weather, in 1466, that it was found necessary, we are told, to open an asylum to malefactors from all parts in order to repeople the capital! Under Louis XI. the post office was established, and the city greatly extended. The foundation of the royal college was laid by Francis I., and this prince raised a noble palace on the site of the old towers of the Louvre. Streets were formed in different parts, edifices of Grecian architecture arose in the place of the old Gothic buildings, and several magnificent churches were built in the same reign. In the time of Henry IV. the faubourg of St. Germain was added, and a great number of streets were laid out in the quarter of the Marsh; the Place Dauphine, the Place Royale, and the Pont Neuf, were built, and several other public squares were made more regular. Under Louis XIII. were erected the gate of St. Gervais, the aqueduct of Arcueil, the quays and bridges of the island of St. Louis, the palace of the Luxembourg, the Sorbonne, the college of Louis the Great, and the statue of Henry IV. At the same time the foundations of the Palais Royal were laid, and the botanical garden planted. Louis XIV. built the Hospital of Invalids, the Observatory, the colonnade of the Louvre, the Place Vendome, and the gates of St. Martin and St. Denis. The military school, the schools of medicine and law, the gates of St. Sulpice and St. Eustathius, and the church of St. Geneviève, were the works of Louis XV. In the reign of Louis XVI. the fountain of the Innocents was repaired for the first time; the corn market, the theatres of the Odeon, the Italians, and Feydeau, the Mont de Piété, and the bridge in the Place de Louis XV. were built, and the botanical garden was enlarged. In 1782 this monarch ordered

the farmers-general to erect new walls round the enclosure of the fauxbourg, with openings at intervals for the admission of merchandise and provisions for the capital. The Place du Carrousel, the triumphal arch which adorns it, the gallery parallel to that of the museum, some immense quays, several gates, the bridges of the Arts and of Austerlitz, the military school, a number of new streets, particularly those of Rivoli and la Paix, the column in the Place de Vendome, that of the Place du Châtelet, the triumphal arch of the Etoile, the wine-market, the granary, many of the markets and fountains in Paris, the front of the hall of the legislative body, the exchange, and the repair of the Louvre, the Luxembourg, and several other public edifices, were undertaken and nearly finished under the reign of Napoleon. Louis XVIII. erected the new equestrian statue of Henry IV., and those of Louis XIII. and XVI., and finished the exchange and the Magdalen.

Situated nearly in the centre of France, this city has been the theatre of the greatest events of more than ten centuries. Under Charles IX., of hateful memory, a dreadful massacre of the Protestants took place here on the night of St. Bartholomew's day; Henry III. and Henry IV. laid siege to this capital; in the seventeenth century it was the theatre of the war of the Fronde, during which the court was obliged to leave the place. Towards the end of the eighteenth century the abuses and exactions, which the nation had for a long time endured, becoming intolerable, a terrible revolution broke out here, when Louis XVI. was condemned and executed, the monarchy was abolished, and a republic decreed; after several years of anarchy Buonaparte, at first nominated consul, and afterwards emperor of the French under the title of Napoleon I., was crowned here by pope Pius VII. In 1814 the foreign powers took Paris by capitulation, and Louis XVIII. made his public entry; Napoleon again entered it as emperor on the 20th of March 1815; but was obliged to abdicate the throne in three months, when it was a second time taken possession of by the allied armies, and the king once more brought in.

Among the numerous public buildings we can only particularise the following: 1. The palace of the Louvre. This superb edifice is of high antiquity. In the reign of Dagobert it was a royal residence; and, burnt by the Normans, it was rebuilt by Louis the Young; Philip I. repaired and enlarged it; but it was still only a pile of buildings of very simple construction and without any marks of symmetry, flanked with a great number of towers, and surrounded with broad and deep ditches. In the centre of these rose a great tower, called the tower of the Louvre, which was successively the residence of kings, an arsenal, and state prison. Philip Augustus and his successors made it their treasury. It was Francis I. who laid the foundation of what is now called the Old Louvre, which was completed in the reign of Henry II. The gallery on the side of the Seine was built by Henry III., and Henry IV.; Louis XIV. built the principal front, which is a fine specimen of architecture, executed by Claude Herault; but the construc-

tion of the gallery on the side of the Rue St. Honoré, and the completion of the Louvre, must be attributed to Napoleon. The form of this palace is square, with a square court in the centre, surrounded with buildings three stories high, the principal of which is ornamented with columns and the rest with bas-reliefs. Four spacious vestibules lead to the interior of the apartments and to the stair cases, the principal of which is very grand. The grand front is towards the church of St. Germain l'Auxerrois; it is 850 feet long, and not inferior to the most beautiful monuments of antiquity. The chief gate is in the centre, adorned with double pillars and crowned with a pediment, the coping of which is formed of only two stones, fifty-four feet long and eight broad. A project was formed during the times of the empire, and is still carrying on, for joining the Louvre to the Thuilleries by a double gallery, one on the side of the Seine which is accomplished, and the other from the north-west pavilion.

2. *The Thuilleries*.—This palace has taken its name from a place where there were several tile-kilns. It was commenced by Catherine de Medici in 1564, after the plans of Philibert de l'orme; the building was continued by Henry IV. and Louis XIII., and finished by Louis XIV. The front consists of five pavilions and four more buildings in the same line, the length of the whole being about 1000 feet. It is composed of almost all the different orders of architecture. The vestibule has five openings, so well planned that through the arcades you have a view of the whole length of the garden, as far as the top of the Elysian fields, presenting a most magnificent perspective. The arrangement and ornaments of the interior of this building constitute it the finest palace in Europe. The apartments are decorated with splendid pieces of painting and sculpture, executed by the most celebrated artists, both Frenchmen and foreigners. Before the front of the carousel is a spacious court, separated from an immense square by an elegant breast high railing; at the central gate is a triumphant arch, upon which were lately placed the four bronze horses which for 500 years adorned St. Mark's Square in Venice.

3. *The Luxembourg*.—This palace was commenced in 1615 by Mary de Medici, and built in the space of six years, under the direction of Jean de Bresse, on the model of the palace of Pitti at Florence. It forms a rectangle of 300 feet in the front, and 360 feet in depth. The front, on the side of the Rue de Tournon, is composed of two pavilions, united by terraces supporting open galleries, in the middle of which rises a cupola united to the main building by two wings raised one story above it; four great square pavilions, the roofs of which terminate in a point, are at the angles of the principal building. The decorations are of the Tuscan, the Doric, and the Ionic orders. On the front of the side towards the court is an allegorical design, relative to commerce. Since the revolution this palace has received considerable additions and embellishments. The principal bodies of the state have successively held their meetings here, and it is at present the place of sitting for the cham-

ber of peers. It contains several vast galleries, in which are exhibited the masterpieces of the French living artists.

4. *The palace of the chamber of deputies*, built in 1721, may bear comparison with the finest palaces of Italy. The entrance in the square is very fine, and the great gateway is adorned on each side with a colonnade of the Corinthian order. In the centre is a portico decorated with eight columns, surmounted by an attic, on the front of which is represented, in basso-relievo, the law protecting innocence and punishing crime. The hall of the assembly is semicircular and arranged in the form of an amphitheatre, the partition walls are of stucco of antique green color, and fringed with drapery; six side niches contain statues of the most celebrated orators of Rome and Athens. The front on the side of the Seine was built between the years 1804 and 1807; it has twelve immense Corinthian columns, supporting an entablature and approached by a vast flight of steps, eighteen feet in height, divided by a balustrade, and about 100 feet broad.

5. *The hall of justice* is an edifice founded in the earliest times of the French monarchy. St. Louis and Philip the Fair made great additions to it; Charles V. and Francis I. made it their residence; in 1776 part of it was consumed by fire, and in the reign of Louis XVI. the grand front was raised, and the court enclosed by a fine railing. The entrance to it is in a semicircular spot, at the end of which runs the Rue de la Barillerie. It consists of a central building and two advanced wings, presenting fronts, each decorated with four Ionic columns. A flight of steps, sixty feet long and seventeen high, lead to the central building, which presents also four columns, with four colossal statues representing Power, Plenty, Justice, and Prudence. The two side wings of the court are pierced, level with the ground, with arcades, above which are raised two floors of buildings. The space occupied by this edifice reaches from the Change Bridge to the Place Dauphine, and takes in the breadth of half of the island of the city. This palace, devoted to the administration of justice by Louis XII., is the seat of the court of cassation, the court of accounts, the royal court, and an inferior court of judicature.

6. *The exchange* is a superb edifice, situated at the end of the Rue Vivienne, on the site of the ancient convent of the nuns of St. Thomas. It is a rectangle, the base of which is 206 feet long and 122 wide. Sixty-six columns support the entablature and an attic, and form a covered gallery round the building. A raised flight of steps, the whole breadth of the western front, leads to this gallery and to the principal entrance. The public saloon in the centre is 114 feet long by seventy-five broad, and receives its light from the cupola.

7. *The palace of the legion of honor* is an elegant structure, once intended for the residence of the prince of Salm Salm. At the entrance is a triumphal arch, decorated with pillars of the Ionic order; from this two galleries lead to two pavilions, which stand forward in the building, of which the attic is covered with bas-reliefs; an Ionic peristyle runs round the court, forming a

continuous covered walk. The principal part of the edifice is at the end of the court; its front is heightened by a set of columns of the Corinthian order.

8. *The palais royal* was built in the year 1629 by cardinal Richelieu, after the designs of James Lemercier. At first it was called *Hotel de Richelieu*, then *palais-cardinal*. In 1639 that minister presented it to Louis XIII. The outer front, on the side of the Rue de St. Honoré, presents to the view pavilions ornamented with Doric and Ionic columns, and crowned with a pediment; it forms a terrace before the court, entered by three fine gates. The main building at the bottom of the first court is pierced with three arches, of which the lowermost forms a vestibule decorated with columns, and leading to a grand flight of stairs. The second court is closed by galleries of wood, under which is the entrance to the garden, which is a rectangle planted with linden trees, in the midst of which are two grass plots, separated by a circular basin sixty feet in diameter, having in its centre a superb fountain. At the end of the garden are three buildings four stories high, the front of which presents 182 porticoes, separated by Corinthian pilasters supporting an entablature with a frieze pierced with windows. A balustrade with vases at intervals on the pedestals surmounts this building in all its extent. A narrow gallery runs quite round the garden, under which persons may walk conveniently, and which receives light through the arcades. These are furnished with brilliant shops, exhibiting every species of merchandise.

9. *The town-hall* was commenced in the year 1533 under the reign of Francis I. It is a Gothic building, very regular and rather harmonious in its proportions; but the bad taste of the age is manifest in all the details. A large flight of steps leads from the Place de Grève to the principal entrance; above the gate is an equestrian statue in bronze, demi-relievo, on a pedestal of black marble, representing Henry IV. The clock, which is considered as a masterpiece, is decorated with an elegant enamelled dial, enlightened at night by a reflector. This edifice has been the theatre of several remarkable political events, and is now the public office of the prefecture of the department of the Seine.

10. *The mint* is situated on the banks of the Seine, almost in the centre of Paris. The first stone of it was laid by the abbé Terrai, controller-general of the finances, in 1771. Six Ionic columns surmounted with a surbase of five arcades adorn the front, and a grand entablature crowns the whole. The principal building is surmounted with an attic, on which are the figures of Prudence, Fortitude, Commerce, Plenty, and Peace, and the principal court is galleries.

11. *The hospital of invalids* is a magnificent establishment, which was founded in 1672 by Louis XIV., as a retreat for officers and soldiers that have been disabled in the service. It stands at the entrance of the plain on Grenelle, and covers a space of sixteen acres of a healthy spot near the Seine. A vast esplanade planted with trees, a grand railing, and a court surrounded with ditches lined with freestone and breast high,

give this place a very imposing aspect. The front is 613 feet in extent. Above the gate is an equestrian statue of Louis. By this entrance you proceed into a large court, having four rows of buildings, in the front of which are two rows of arcades one above the other, forming corridors or galleries. The middle of each front juts out before the rest of the building, and there are four stories of apartments very conveniently arranged. At the end of the royal court is the entrance to the church, which consists of a large nave and two aisles decorated with Corinthian pilasters; it is in the form of a Greek cross, and beyond it is the dome, one of the finest structures in France. Round its circumference are six chapels richly ornamented with paintings and sculpture; on the right side is the tomb of Turenne, and opposite to it that of Vauban. The entrance is at the back of the hospital, looking towards the Boulevards, elevated on a lofty flight of steps and decorated after the Ionic and Corinthian order, with a triangular front. A row of Corinthian columns runs round the dome covering a cupola surmounted with a lantern, above which is a cross about 300 feet from the ground. The dome is covered with lead and richly gilt. This hospital contains 7000 pensioners, who are all well lodged and maintained. The governor is always one of the marshals of France.

12. *The military school* was erected, in 1751, for the instruction of young men of noble families who are designed for the army. The principal entrance is on the city side, and presents a vast court surrounded with extensive apartments and enclosed by a railing. The opposite front overlooks the Champ-de-Mars, originally designed as a place of exercise for the school.

13. *The observatory* was begun in 1667, and finished in 1672. There is neither iron nor wood employed in its construction. Its form is that of a rectangular parallelepipedon, with four fronts towards the four cardinal points. Two octagonal towers are built at the two corners of the southern front, and a third, which is square, in the middle of the entrance of that on the north. The platform on the top of the edifice is eighty-five feet from the ground; and the under-ground apartments are of an equal depth below, and a flight of 360 steps leads to the top. The interior is divided into chambers, and saloons appropriated to astronomical and physical observations. Six of these latter have openings corresponding to the different points of the heavens. Under the platform are cabinets adapted for the use of the different instruments. Here is a meridian for observing the longitudes; and, on the first floor of the western tower, a geographical chart, or planisphere, twenty-seven feet in diameter, traced with the utmost precision under the direction of Cassini.

14. *The triumphal arch of the Carousel* was raised in the year 1806, to commemorate the exploits of the grand army: it is forty-five feet high, sixty broad, and twenty-one deep. Like those of the ancients, this arch consists of three arcades cutting three others in a transverse direction. It is built of hard freestone; eight columns of red Languedoc marble, with chapters of the Corinthian order executed in bronze, adorn the

two fronts, supporting an entablature with frieze of Italian marble. On the top were placed the famous Corinthian horses which were brought from Venice.

15. *The triumphal arch of the Etoile* was begun in 1806, but the building was interrupted in 1814. An ordonnance of Louis XVIII., however, issued in 1825, caused the works to be resumed. It will be 135 feet high; its front is pierced with a single arch, eighty-seven feet high, and forty-seven in the span.

16. *The gate of St. Denis* is a triumphal arch, and one of the finest monuments in Paris: it was erected in 1672. It is open like those of Titus and Constantine at Rome; it is generally thought that neither Rome nor Greece possesses any thing more perfect in its kind. It is seventy-two feet high and as many broad; the portico in the middle is an opening of fourteen feet by twenty-four; within the arch are trophies of arms and two globes, with the arms of France, surmounted by a crown; at the bottom stand two colossal statues, one representing Holland under the figure of a terrified woman sitting on a lion, which holds in one of its paws seven arrows, representing the seven united provinces; the other representing the genius of the Rhine resting on a lion and holding a cornucopia.

17. *St. Martin's Gate*, situated at the end of the street of the same name, was built in 1674, by the city of Paris, in honor of Louis XIV. It is fifty feet high by as many broad; has three openings, of which that in the middle is the largest; and is adorned with four bas reliefs, representing the taking of Besançon, the breaking of the triple alliance, and the defeat of the Germans by Louis, who is represented under the figure of Hercules, with a club in his hand, beating down an eagle.

18. *The triumphal column of the Place Vendôme*, raised to the honor of the French victories in Germany, was commenced in 1806, and finished in 1810. It is 200 feet high and twelve feet in diameter; the pedestal is twenty-two feet high and from seventeen to twenty feet broad. Trophies of arms and the dresses of Austrian and Russian officers cover the sides of this part of the monument; at each angle, above the cornice, is a colossal eagle supporting a crown of laurel. There are also the beginnings of a set of bas reliefs commemorating the principal actions of the campaign of 1805. On the top of the chapter is a gallery, to which there is a flight of 160 steps in the interior of the building, and in the midst of it is a little dome, designed at first to receive a statue of Charlemagne, but on which they had placed one of Napoleon; in the place of which, in 1814, a fleur de lis was substituted. The railing round this column is distinguished for its beauty and elegance. This pillar was constructed out of the 200 pieces of cannon taken from the Russians and Austrians in a campaign of three months: the whole weight of the brass amounted to 1,800,000 lbs.

There are in Paris fifty-six churches, temples, or chapels, several of which are masterpieces of architecture; the chief of them are,

19. *The metropolitan church of Notre Dame*, a fine gothic edifice, which presents a boldness of construction that constitutes the true beauty of

that style. The solidity and noble arrangements of all its parts are highly creditable to the skill of the architect. It is built in the form of a cross, and is 390 feet high, and 144 broad. The principal front is remarkable for its elevation, and its sculpture: it is terminated by two great square towers 280 feet high, ascended by 380 steps, and communicating by galleries within, which support several Gothic columns of astonishing delicacy. The whole of the interior of the nave and choir is supported by twelve pillars, and there are large galleries separated by columns of a single piece; in these the audience are placed to see the grand ceremonies. Behind the chief altar is a group of four figures in white marble, the principal of which are eight feet high; it represents the descent from the cross, and is an admirable work, executed by Coustou in 1723.

20. *The pantheon*, or new church of St. Genevieve, erected after the designs of Soufflot, is one of the finest monuments that have been raised in France since the revival of the arts. It is in the form of a Greek cross, and its portico is similar to that of the pantheon at Rome. The exterior consists of four naves, in the middle of which rises the dome adorned with thirty-two Corinthian columns; the height is about 282 feet. The double cupola in the interior is a masterpiece for its boldness and lightness. By a decree of the 4th of April, 1791, this church received the name of the pantheon, and was consecrated to the reception of the ashes of those who have deserved well of their country. On the front of the peristyle it until lately bore the following inscription in French,—

‘A grateful country to its great men.’

In February 1806 the name of St. Genevieve was restored, and it was devoted to the sepulture of the great officers of the legion of honor, and those citizens who had rendered eminent services to their country. Lastly, by an ordinance of the king in the month of December 1821, it was restored to the Catholic worship; the French inscription was changed for a Latin one; and the remains of Voltaire and Rousseau were clandestinely removed to make way for the relics of St. Genevieve, which had been burned and dispersed during the revolution, but of which the new authorities had succeeded in procuring a fresh supply!

21. The church of *St. Sulpice* was begun in 1678 and finished in 1745. The portico is considered a very fine piece of architecture: it is 384 feet in front, with a flight of fifteen steps ascending to it, on the top of which is a grand platform. The towers are 210 feet high. The choir contains the figures of Jesus Christ, St. Paul, and St. Peter, sculptured by the celebrated Bouchardon. The chapels are decorated with paintings in fresco of great beauty, and the pulpit, to which the ascent is by marble steps, excites the attention of all connoisseurs.

22. The church of *St. Germain l'Auxerrois*, which was founded in the seventh century, but destroyed by the Normans, and afterwards rebuilt and beautified at different epochs. The grand portico is the production of the fourteenth century.

23. The building of new *Magdalen* church was commenced in 1764, by order of Louis XV., and continued under the following reign; but owing to the revolution the work was stopped from 1789 to 1806, when Napoleon conceived the idea of making it a temple to glory, dedicated to the grand army. The works were accordingly recommenced and a second time suspended. In 1816 a royal ordinance determined that this church should be finished on a new plan and devoted to the reception of the expiatory monuments of Louis XVI., and Marie Antoinette. The interior of the temple of glory was to have been a parallelogram decorated with pilasters; its ulterior destination must make many changes in the plan and arrangement. Besides these, the churches of St. Roch, St. Eustathius, St. Gervaise, le Val-de-Grace, the Sorbonne, the Holy chapel, St. Steven of the Mount, the Oratoire, &c., are well worthy of attention.

Seventeen bridges, twelve of which are of stone and very beautiful, communicate with the different parts of Paris. The bridge of Austerlitz, or of the botanical garden, connects the botanical garden with the arsenal. It consists of five arches of cast-iron, supported on piles and abutments of freestone; it is 400 feet long and thirty-seven wide, and cost 3,000,000 of francs, which is defrayed by a toll on carriages and foot passengers. The bridge of Grammont joins the arsenal to the isle Louvieres. St. Mary's bridge connects the Elms quay with the island of St. Louis. The bridge of the Tournelle, forms a communication between the quay of the same name, and the isle of St. Louis. The city bridge, built in 1804, joins the city to the island, the abutments are of stone, and its arch wood. The Pontau-Double connects the Rue de la Bûcherie with the bishopric; it was built in 1634. The Little Iron Bridge, erected in 1606 over a small arm of the Seine, establishes a communication in the interior of the Hotel-Dieu. The Little Bridge, uniting the quarter of St. James's to the city, may be regarded as one of the most ancient in Paris; as it formed, with the Change Bridge, the two entrances of Parisii or Lutetia, in the time of the Romans. The latter, thrown over the grand arm of the river, is the largest in Paris; it has seven arches. The Bridge of Notre Dame, remarkable for its solidity and elegance, forms the communication between the quay Le-pelletier, and Dessaix Quay. Here is an hydraulic engine which furnishes water to several parts of Paris. St. Michael's bridge joins the Augustine's Quay with the New Market. Three bridges had been built on this spot, when in 1616 the present one was erected by a company, on the condition of being allowed to build houses; of these there were thirty-two, but they were pulled down in 1804. Pont Neuf, consisting of twelve arches, was begun in 1578 and finished in 1604 under the reign of Henry IV. It is thrown over two arms of the river, in the middle of which is the island of the City; and is 468 feet long by seventy-eight broad. The platform between is occupied by the statue of the good king Henry on horseback; the bronze group which composes this monument is fourteen feet high. The bridge of the arts is situated between

the palace of the Louvre and that of the fine arts, from which it takes its name. It consists of nine iron arches with stone abutments; its length is 516 feet, and its breadth thirty; foot passengers pay a toll here. The Royal Bridge was built in 1685, by order of Louis XIV., and joins the Louvre Quay with Voltaire's Quay. It is 432 feet long, and fifty-two broad. From this bridge the passenger has a most delightful view over the capital, embracing the Thuilleries, the Louvre, the two arms of the Seine, &c. &c. Louis XVI's. Bridge, commenced in 1787 and finished in 1791, joins the square of Louis XV. with the quays of Orsay and the Invalids. It was built by the architect Peyronnet, and is remarkable for the boldness of its arches, the vast extent of the square in which it abuts, and the elegant buildings of which it commands a view. The bridge of the Military School forms a line of communication between the Champ de Mars and the road to Versailles; it is 460 feet long, by forty-two broad, and perfectly horizontal. The Suspension Bridge of the invalids, uniting the esplanade of that hospital with the Elysian Fields. It is supported by four columns ten feet in diameter at their bases, and the chain, comprising the curve which it describes, is 240 metres in extent, formed of long links, and sustained by masonry imbedded thirty feet deep. The breadth of this bridge is forty-two feet.

The numerous fountains that embellish this capital, and contribute to the health and comfort of its numerous inhabitants, are supplied from three reservoirs, two steam pumps, and one hydraulic machine. The reservoir of Cassini distributes the waters, which are brought to it by the aqueduct of Arcueil; the reservoir of St. Martin's boulevard is supplied from the canal of the Ourcq; and that of the Palais Royal receives the waters of the Seine and the Arcueil. The Fountain of the Innocents is the finest in Paris: it was built in 1551 after the designs of Pierre Lescot. It is ornamented with basso-relievo and figures of great beauty; the water issues from a large vase and falls in magnificent cascades. This monument is forty-two feet in height. The fountain of Grenelle is the work of the chisel of the celebrated Bouchardon; it is decorated with seven statues, the three principal of which are grouped and represent the city of Paris seated on a pedestal with the Seine on one side and the Marne on the other, rendering homage to her and bringing to her all the productions of the seasons, which are designed by four figures placed around the group. The fountain Dessaix was erected in 1801 to 1803, to the memory of general Dessaix, who was killed at the battle of Marengo. It represents a military genie crowning the figure of Dessaix; two figures of Fame are inscribing on two rolls, one, Thebes and the pyramids, and the other Kel and Marengo; on the front of the pedestal the name of the warrior is engraven in letters of gold. The Fountain of the Palm-tree, finished in 1808, is situated in the centre of the Place du Chatelet. It is of a quadrilateral form, and in the midst of it rises, from a basin twenty feet in diameter, a column in the Egyptian style representing a palm-tree; the jet which serves for a base rests on an elevated

platform, each angle of which is adorned with a cornucopia, from which issues the water. Above the column is a ball, on which is a figure of Fame with spread wings and extended arms, and holding a civic crown in each hand. Below are four statues representing Justice, Fortitude, Vigilance, and Prudence. The pillar is cut at equal intervals by bracelets, on which are inscribed in letters of brass the names of the principal battles gained by the French armies; the chapter is ornamented with feathers and palm-leaves, and the pedestal has an eagle with outstretched wings and is encircled with laurel. The fountain of the Medical School consists of a grotto formed by four fluted columns of the Doric order; the waters fall from the arch above, and are supplied from the Seine. Besides these there are several others very beautiful.

Paris contains several fine squares or public places, the most remarkable of which are, the Place du Carrousel; between the Louvre and the Thuilleries, which is one of the largest in Europe. The principal ornament which it presents is the triumphal arch already mentioned. The Place Vendôme, executed after the designs of Mansard was commenced in 1699 and finished in 1715. It is octagonal, with four long and four short sides. The centre was occupied by an equestrian statue of Louis XIV., which was thrown down in 1792, and its place is now occupied by the triumphal column raised to the honor of the French armies. The Place des Victoires, of an oval form, was built in 1686, after the designs of Mansard. It is surrounded with beautiful buildings ornamented with pilasters of the Ionic order. Before the revolution here stood the statue of Louis XIV., treading on a Cerberus, the symbol of the triple alliance over which he had triumphed, and behind him was the figure of Victory; at the four corners were four slaves in bronze, chained and sitting on trophies, representing the nations France had conquered. This was destroyed in 1792 and is now replaced by another of more recent execution. The Place Louis XV., which has been successively called the Place de la Revolution and the Place de la Concorde, was finished in 1772. It is a parallelogram of 780 feet in length by 630 broad, surrounded by large ditches fenced with stone balustrades. Its four outlets present magnificent views of the Thuilleries, the Magdalen, the arch of the Etoile, and the palace of the legislative body. Here it was that Louis XVI. and Marie Antoinette were beheaded in 1793; an expiatory monument is now built on the spot in memory of this deplorable event. There are other public places which deserve mention, as the Place Royale with the statue of Louis XIII.; the Place Dauphine, the centre of which is occupied by a fountain with the statue of general Dessaix; the Place du Chatelet, remarkable for the palm fountain; the Place de l'Hotel-de-Ville, surrounded with very ancient houses; the Place St. Antoine; the Place Maubert, &c. &c.

This city also contains a number of public establishments, remarkable for the elegance of their construction, in its halls, markets, hospitals, prisons, cemeteries, &c. There are thirty-seven halls or markets, the principal of which are the follow-

ing:—The corn market, built in 1767 on the ancient site of the Hotel de Soissons, is a circular building isolated and open on all sides, being pierced with twenty-five arcades six feet and a half wide, answering to as many streets, which they front. It is of the Tuscan order of architecture. Above these are vast granaries, vaulted with brick and stone, with which two flights of stairs communicate. The cupola, which was considered very fine, was consumed by fire in 1802; but in 1811 it was replaced by an iron one. The market of the Innocents is in the same quarter with several others in a vast area once occupied by the church and cemetery of the Innocents; it is a great square, surrounded with large and convenient galleries; in the centre is a superb fountain with four jets at the four angles. Here the wholesale market of fruits and vegetables commences at break of day, and closes between nine and ten o'clock; then begins the retail trade, which lasts through the day. The cloth market was built in 1786; it is isolated on all sides, and surrounded with a foot path enclosed within a railing; it is 400 feet long and fifty feet broad. The roof is vaulted and covered with tinned copper. It is open every day for the sale of cloths, and three days in the month for linen. The poultry and game market, erected on the site of the old convent of the Great Augustines, was finished in 1811; it is built of free-stone, covered with slates, and consists of three galleries, separated by pillars supporting arches. It is 190 feet long and 141 feet broad. The calf market was built in 1774, and is surrounded by four streets. It is open every Wednesday and Saturday for the sale of calves, and on Fridays for the sale of tallow. Among the markets we might also mention the wine market, the flower and shrub market on Dessaix quay, the Jacobins market, &c. &c. Besides these there is the granary of reserve, a vast edifice begun in 1807, consisting of a long line of five square pavilions, united by four principal buildings. Here are deposited about 25,000 sacks of flour, belonging to the bakers of Paris.

Of the several large and well conducted hospitals in this city we may particularise the Hotel Dieu for the reception of 4000 sick; the general hospital de la Salpêtrière, designed for women; the Val de Grâce, a military hospital; the hospital of St. Louis; the lying-in hospital; the Foundling Hospital, &c. &c. Paris contains ten prisons:—the Conciergerie, where persons committed for trial are confined; the great and little Force; the St. Pelagie, where are destined those who are arrested for debt, and persons convicted of political crimes; Les Madelonnettes, a prison designed for women who are condemned for any crimes; St. Lazare; l'Abbaye, a prison for the military; the Montaign; the Refuge; and the Hotel de Bazancourt, a place of confinement for the national guard. Since the practice of burying the dead within the cities has been abolished there have been only five burial grounds:—the cemetery of Vaugirard, that of Mount Parnassus, of St. Catherine, of Mont Martre, and St. Louis, or the Père Lachaise. This last is the largest in Paris, containing an area of eighty acres, and a vast number of monuments, among which may

be mentioned those of Molière, La Fontaine, Chenier, Monge, Foi, Massena, Parmentier, Grètry, Mehul, Girodet, Delille, and many others. The cemetery, which has several rising grounds, affords a picturesque walk, and is much frequented in fine weather. The catacombs are vast subterraneous caverns, in which, during the eighteenth century, the bones taken out of all the burial grounds of the city were deposited. These were formerly quarries, from which has been dug most of the stone for the churches, palaces, and other public buildings, and they now serve as a depository for the remains of past generations. They have three entrances, the first by the western pavilion of the *barrière d'Enfer*, the second at the tomb *Isore*, and the third in the plain of Mount *Souris*. The first is most used, and visitors are admitted on producing a ticket from the inspector general, or any of the superintending engineers.

Among the public establishments of Paris should be noticed the *baths*, which have much increased in number within these few years past, and received considerable improvements in regard to neatness, convenience, and elegance. There is still wanting, however, an establishment of this kind where the working class could, for a small sum, or even gratuitously, enjoy this healthful exercise. There are twenty-five public baths; the most frequented of which are those of *St. Sauveur*, *Montesquieu*, *Chinois*, *Turcs*, *Tiquetonne*, *Géures*, and *Vigur* upon the *Seine*, near *Pont Marie*, *Pont Neuf*, and *Pont Royal*; raised two or three stories high on elegant boats as large as great vessels, and containing 150 bathing boxes.

There are many fine gardens, among which the following are particularly worthy of notice:—The garden of the *Thuileries*, planted by the celebrated *Le Notre*, consists of two parts, one near the palace, occupied by beds of flowers, the other by immense trees, and the whole encircled with spacious terraces. The different *parterres* are divided by grass plats, and among them are three circular pieces of water, stocked with fish and swans, and a fountain in the centre; to these follow two masses of trees, equal in extent, and arranged on the right and left of the middle alley; they are principally chestnuts and elms. At the extremity of these is an immense octagonal basin, with a fountain, beyond which is the railing of the *Champs Elisées*; here the two principal terraces terminate, and the angle which they form is occupied by a platform of great length, planted with shrubs of various sorts; these terraces are covered with avenues of trees. Besides the common plants here are found some most beautiful orange trees, and other exotics, which are brought out in the spring, and continue till the chill nights of autumn. Statues and groups, copies of the masterpieces of antiquity, or the work of skilful modern artists, add to the beauties of this delightful garden. The *Luxembourg* garden, which owes its origin to the duke of *Luxembourg*, but was almost entirely laid out afresh in 1806, rivals that of the *Thuileries* in the thick clusters of its trees and the beauty of its *parterres*. Here also are scattered copies of a great number of antique statues, placed in such a manner as to

vary and embellish its whole extent. The botanical or king's garden, established in 1636, by *Guy de la Brosse*, physician to *Louis XIII.*, for the cultivation of foreign plants, has received considerable additions since that period; but it is particularly to the celebrated *Buffon* that it owes its present splendor, being the finest of the kind in Europe. It consists of a garden of plants methodically arranged; a menagerie, an amphitheatre for the lectures, and a library. The garden, reaching to the banks of the *Seine*, presents one of the largest, pleasantest, and most healthy walks in the neighbourhood of Paris; here are found trees, shrubs, and vegetables from every country upon earth. In the upper part, which is planted with evergreens, and called the *Swiss valley*, there is a little eminence, ascended by a spiral road, whence you enjoy a most delightful view. This hill is crowned with a pavilion in bronze very elevated, and surmounted by a sphere. One of the most interesting parts of this garden is the menagerie, where the animals range at liberty within greater or less enclosures, suited to their different natures. The *Elysian fields*, a fine promenade opposite the grand alley of the *Thuileries*, of which it seems only a continuation, was planned in the reign of *Louis XIV.*, and partly replanted in 1770. In this place and the squares adjacent to the avenue of *Neuilly* the public rejoicings take place. The *Champ de Mars* is a vast rectangle 2700 feet long by 900 broad, and reaches from the military school to the *Seine*. It is surrounded with ditches coped with masonry and sloping terraces, and adorned both within and without with four rows of trees, and five iron railings connected with the five gates. This place is capable of containing 400,000 persons, and it was here that, on the 14th of July 1790, *Louis XVI.* took the constitutional oath, and it was on that occasion that the idea was conceived of making slopes or steps to accommodate the spectators; but the work was advancing very slowly, though 12,000 workmen were employed in it, when the inhabitants of Paris spontaneously engaged in the undertaking, and it was finished with the greatest ardor and celerity. Here, during the same year, a funeral ceremony was performed in honor of the citizens who had fallen before *Nancy*; here were held the anniversaries of the 14th of July and the 10th of August, the festivals of reason and of the Supreme Being! Here the directory received the statues from Italy, and here in 1815 *Napoleon* reviewed the whole of the imperial guard, and about 60,000 of the national guard of Paris.

This city is externally surrounded by boulevards, forming three alleys bordered by four rows of trees; the middle of the principal alley is occupied by a road; the side alleys are gravelled, and afford very pleasant walks. The old boulevard within the city was commenced in 1536, at the time that the English were ravaging *Picardy* and menacing the capital; in 1668 they began to plant trees. It runs from the banks of the *Seine*, near *St. Martin's* lock, to the entrance of the *Rue Royale*, and is about 2400 feet in extent. It is one of the most frequented walks in the capital, both on account of the fine view which it presents of gardens, hotels, shops, the-

atres, coffee-houses, and other public buildings, and the multitude of spectators met with at every step. Some years before the revolution the farmers general, having obtained permission of Louis XVI. to extend the limits of Paris, built walls and constructed numerous barriers at all the issues from the city, some of which are models of taste and elegance.

Among the numerous public establishments of this metropolis the theatres undoubtedly hold a high rank. Of these there are five royal and eight secondary, for the most part extremely well filled, 10,000 persons at least daily frequenting them. The annual produce is about 72,000,000 francs, yielding 720,000 francs to the poor of Paris. The Opera house is the most celebrated in Europe for the magnificence of its decorations, the beauty of the scenes, the perfection of the dancing, the composition of the ballets, and the skill of the musical performers; it contains seats for 1937 persons. It owes its origin to the abbé Perrin, was established at first as a tennis court, and was transferred from place to place, till at last the saloon of the palais royal was occupied for the purpose. This place being consumed by fire, in 1781, the opera was again removed to several places, until it was fixed in the Rue de Richelieu; but in 1820, the duke of Berri having been assassinated as he was coming out of this place, it was shut up and soon after pulled down, a new house having been erected in the Rue Lepelletier. The royal French theatre was opened in 1790; it is situated in the Rue de Richelieu, and has a front adorned with twelve Doric pillars, with Corinthian chapters, and an entablature. It is 166 feet long and 105 broad, the front of the stage being thirty-eight feet wide; it will seat about 1500 spectators. In the middle of the vestibule is a statue of Voltaire. The theatre for comic operas, built in 1791, has recently been pulled down in order to accomplish the projected improvements in the quarter of the exchange; it has since been rebuilt on a new site. The performances at this theatre are aided by the labors of some of the first composers of the day. The royal theatre of the Odeon was first built in 1782, but has been burned down twice, in 1799 and 1818; it was rebuilt in 1821, and constituted the second French theatre. The front is in a simple and noble style of architecture, having a peristyle in advance, ornamented with eight Doric pillars; under the porch three doors lead into a vestibule decorated after the Tuscan style. The body of the building is entirely isolated, but joined by three galleries pierced with forty-six arcades. The interior is of an oval form, fifty-six feet long and forty-seven broad; the king's box is in the middle, and is richly decorated. The royal Italian theatre is situated in the Rue de Louvois, and is open three times a week for serious and comic operas of the different Italian schools. The secondary theatres are the Vaudeville, *Les Variétés*, the Dramatic Gymnasium, *La Porte St. Martin*, *La Gaité*, *L'Ambigu-Comique*, the Olympic Circus, and the Magic or Children's Theatre.

The *French Academy* holds the first rank among institutions for the encouragement of the arts and sciences. It was founded in 1635 by

cardinal Richelieu, but suppressed by the convention in 1793; this same convention, after having overturned the tyranny of Robespierre, by a decree of the 28th of October, 1795, founded the Institute in the room of the Academy of Sciences, the French Academy, the Academy of Inscriptions and the Belles Lettres, and the Academy of Painting, Sculpture, and Architecture. In the year 1803 Buonaparte, who had been nominated a member of the Institute, on his being created consul made a fresh arrangement into four classes: that of natural philosophy and mathematics to consist of sixty members; languages and French literature forty members; history and ancient literature forty members; and the fine arts thirty members, which has been since increased to forty. At the return of the king, in 1814, Lucien and Joseph Buonaparte, members of the second and third classes, were expelled. The year following M. Vaublanc gave a new constitution to the Institute; the names of Regnault de St. Jean d'Angely, Cambacères, Merlin, Maury, Gregoire, Lebreton, Arnaud, St. Etienne, the celebrated David, and others, were erased, and (a thing unheard of before) the king nominated to the vacant places. The sittings of the Institute are held at the Palais des Beaux Arts.

In no city in the world are scientific establishments, and the means of instruction, so multiplied as in Paris. There are thirty-six great institutions for public education, besides more than 300 private seminaries, where the different branches of science are taught. The university was suppressed in the year 1793, but re-established in 1808, and re-organised in 1821. The faculty is composed of five orders, and is under the direction of a minister of state, who superintends the ecclesiastical business and the public instruction. The five orders are the faculties of theology, law, medicine, natural philosophy and mathematics, and belles lettres, and they consist of a grand master, a director of public instruction, several inspectors general of the studies, honorary inspectors general, inspectors of academies, rectors, provisors, &c. The principal establishments of education are the Royal College, the abovementioned faculties, the royal colleges of Louis le Grand, Henry IV., Bourbon, Charlemagne, and St. Louis; the colleges of St. Barbe, Stanislas, and the British; the royal polytechnic school; the royal colleges of oriental languages, mines, bridges, and highways; of charters, music, and riding; the institution for the deaf and dumb, &c.

Besides the establishments particularly devoted to instruction, Paris contains a number of societies which have rendered great services to science, the arts, commerce, and industry; the chief of them are, the Central Agricultural Society, the Society for the Encouragement of National Industry, the Royal Society of Antiquaries, the Geographical Society, the Society for Elementary Instruction, the Royal Academic Society of Sciences, the Athenæum of Arts, the Polytechnic Society, the Royal Athenæum, the Grammatical and Philomathical societies, the Literary Society, the Society of Friends of the Arts, the Academic Society of the Children of Apollo, the Writing

Society, the Linnæan Society, the Protestant Bible Society, the Asiatic Society, the Society of Animal Magnetism, the Lyric Society of Momus, and the Catholic Book Society.

There are numerous public libraries, some of them containing immense collections of books and manuscripts. These are open to the public and to men of letters almost the whole year, and present inexhaustible sources of instruction. Most of them have a large saloon, well warmed in the winter for the accommodation of the visitors. The king's library, the foundation of which goes as far back as the reign of Charles V., contains nearly 600,000 printed volumes, and 80,000 MSS. It consists of the library properly so called, a cabinet of antiquities and medals, a cabinet of prints, and the gallery of MSS. It is open every day from ten to two: the vacation commences on the 1st of September and closes on the 15th of October. Monsieur's library, or that of the arsenal, is the second in Paris for the number and value of the works it contains. There are about 200,000 volumes and 10,000 MSS; but very few modern works. It is open from ten to two, except in the vacation from the 15th of September to the 3d of November. The city library is open every day from twelve to four, except on festivals and the days of the sittings of the medical and agricultural societies. It contains 42,000 volumes, among which are many modern works. Vacation from the 1st of September to the 15th of October. The library of St. Genevieve, or the Pantheon, remarkable for the beauty of its architecture and decorations, as well as for the choice of books it contains, reckons about 112,000 volumes, and 3000 MSS. It is open every day from ten to two, and its vacation continues from the 1st of September to the 12th of November. The Mazarine library, at the Institute, is open every day, except from the 15th of August to the 15th of October, and on Thursdays and Sundays. It contains 93,000 volumes and 4000 MSS. The library of the Institute is not public, but admission is easily procured on the recommendation of a member. It contains about 70,000 volumes. The library of the king's garden, in the museum of natural history, presents a rich and varied collection of works relative to the natural sciences, herbaries, designs of plants and flowers, and paintings of animals. It is open to the students on Mondays, Wednesdays, and Saturdays, from eleven to two, and to the public from four to seven during the spring and autumn, and from three till dark during the autumn and winter. The library of the medical school contains about 30,000 volumes, including all the treatises on medicine and chemistry published since the time of Philip Augustus, down to the most modern works of this description. It is open on Mondays, Wednesdays, and Fridays, from eleven to two, and its vacation is from the 15th of August to the 1st of November.

The school of medicine is one of the finest establishments in Paris; its amphitheatre, capable of holding at least 12,000 persons, is adorned with paintings by Gibelin, and has the busts of Peyronie and Martiniere, the founders of the school. In a long gallery are seen skeletons of both sexes and all ages, from the skeleton of the

foetus, which presents scarcely any osseous fibres, to that of the old man, in which ossification is so far advanced that cavities and sutures are almost entirely effaced. Here are also many skeletons of animals, for the study of comparative anatomy. Opposite to this gallery are specimens of all sorts of diseases of the bones, and deformities in their conformation; a number of injected preparations exhibit the systems of the vessels, the blood, the arteries, the veins, and the lymphatic organs; here is likewise a collection of voided stones, and stony concretions formed in various sorts of animals; also a number of monstrous productions and pieces of comparative anatomy, preserved in spirits of wine. A second room presents the whole apparatus of the surgery. In a third room are wax figures illustrative of the nervous, vascular, sanguineous, and lymphatic systems. There are also representations in wax of a great number of pathological cases. Two figures, in particular, surpass every thing of this kind that has ever been executed; they exhibit the whole of the lymphatic system, external and internal. These masterpieces, as well as several others, were executed by M. Lavoisier, a surgeon of Rouen. A fourth room contains all the natural substances which the three kingdoms of nature furnish to the *matéria medica*; and a fifth is devoted to demonstrations of the lectures on medical physics.

Besides the libraries already enumerated, there are those of the chamber of peers containing 10,000 volumes, of the chamber of deputies 30,000, of the minister of the interior 7000, of the observatory 2000, of the school of bridges and highways 4000, of the school of the mines 6000, the polytechnic school 24,000, of the college of Louis the Great 30,000, the conservatory of arts and trades 10,000, the prefecture of the police 8000, the seminary of St. Sulpice 20,000, of the ministry for foreign affairs 15,000, the king's cabinet in the gallery of the Louvre 30,000 the museum of the Louvre 3000, the school for music and declamation 5000, the dépôt of charts and plans for the navy 12,000, that of the minister of war 4000, the central dépôt of the artillery 6000, the dépôt for charts and plans of wars 10,000, the hospital of invalids 25,000, of the minister of justice 8000, of the royal printing office 3000, of the court of cassation 30,000, and the lower court 20,000 volumes.

The royal museum of the Louvre is the greatest collection in Europe, and, notwithstanding the losses it has experienced, it contains many masterpieces of all the schools. It consists of three principal divisions, the first containing the statues, the second the pictures, and the third the designs. The museum of antiques is on the ground floor, that of the drawings on the first floor, and the paintings occupy the saloon and the grand gallery that unites the Louvre to the Thuilleries. The first three divisions of this gallery are devoted to the productions of the French school; the second three to the German, Flemish, and Dutch, schools, and the last three to the Italian. An exhibition of the pictures and sculptures of French living artists takes place every two years in the gallery of the Louvre. The museum is open to the public every Sunday from ten to four. The royal museum of the Luxembourg contains

several rooms devoted to the exhibition of the principal pictures of living artists, when these pictures become the property of the government. It is open on the same days as the Louvre. The museum of Natural History consists of a botanical garden, with hot-houses and green-houses of several galleries, in which the productions of the three kingdoms are methodically arranged, a menagerie of living animals, a library of natural history, a cabinet of comparative anatomy, and an amphitheatre with laboratories for the courses of lectures.

The conservatory of arts and trades, for the reception of all the newly invented instruments and machines, contains a numerous collection of instruments, tools, models, drawings, descriptions, and books of every trade and art. It is open to the public on Sundays and Thursdays from twelve to four o'clock. The royal manufactory of the Gobelins, or tapestry of the crown, was founded by Gilles Gobelins in the reign of Francis I.; but it is to Colbert that France partly owes the perfection of this fine establishment. Nothing can be richer or more wonderful than the tapestry fabricated here; it will bear comparison with the most celebrated printed linens, and often surpasses them in the splendor of its colors. The pictures wrought at the manufactory of the Gobelins represent subjects taken from history and are destined to adorn the palaces of kings and princes. The royal tapestry manufactory, called la Savonnerie; here are manufactured foot carpets on the same style as at the Gobelins. The royal looking-glass manufactory was founded in 1634, under the direction of Colbert. Before that time France had been supplied with glasses from Venice. They cast glasses at St. Gobain, ten feet high by from four to five broad, and convey them by the Oise to Paris, where they are silvered and polished.

The manufactures of Paris consist of fine cloths, merino and cachemere tissues, shawls, gauzes, silks, crapes, ribands, blonds, prints, paper-hangings, gold and silver lace, mercery goods, caps, hats, embroidery, modes, straw silk and cotton hats, artificial flowers, saddles and harness, coaches, furniture, bronze and gilt articles, polished steel, cutlery, goldsmiths' articles, clocks and watches, jewellery, gold and silver plating, metal buttons, files, tools, mathematical instruments, instruments for natural philosophy and astronomy, fine ironmongery, mock pearls, draught and chess boards, perfumery, chocolate, liqueurs, leather gloves, pasteboard, brushes, pencils, corks, catgut, shot, sheet-lead, printing types, nails, wax candles, glue, starch, oils of different kinds, mineral acids, chemicals, saltpetre, soap, white-lead, leather, varnish, porcelain, and crystal. There are numerous silk, woollen, and cotton dye-houses, wax bleaching-houses, sugar and salt refineries, tan yards, curriers' shops, morocco leather factories, cotton, woollen, and cachemere down spinning factories, gas works, royal manufactories of carpets, looking-glasses, and tobacco. A considerable trade is carried on in all the above articles, also in corn, flour, dry vegetables, wines, brandies, vinegar, mineral waters, butter, cheese, and provisions of all sorts; fruit, fish, grocery, colonial produce, and provisions; coal, charcoal, wood, colors, marble, free-

stone, tiles, slates, delfware, glass, &c. &c. It is the great market for provisions, &c., for the consumption of Paris; and there are excellent races during the first fortnight in September, for twenty-one departments, at which a royal plate is run for, of the value of 6000 francs or £240.

This was the native place of Voltaire, Boileau, Moliere, D'Alembert, J. B. Rousseau, Helvetius, Loubet, Segur, Arnaud, Cauchois le Maire, Dessault, Norvins, Perceval-Grandmaison, Volkeimaer, Mercier, La Harpe, Jaucourt, Pougens, Villemain, and Cousin, men of letters; Bernard Marivalt, Destouches, Favart, La Mothe Beaumarchais, Marsollier, and Picard, dramatic authors; Madame de Sevigné, Santeuil the poet, Beranger, Kain, Talma, Mole, and Martin, celebrated actors; of Lavoisier, the great chemist, beheaded at Paris during the revolution in 1793, Gassecourt jun. the famous apothecary, the abbé l'Epée, the founder of the deaf and dumb asylum; Rollin, Henault, and Le Beau, historians; Condamine, the traveller and astronomer; of Le Maistre de Sacy and Anquetil, oriental scholars; Millin, the learned antiquary; of the celebrated painters David, le Sueur, le Brun, Drouais, Vouet, and Horace-Vernet; of Perault and Mansard, architects; of Goujon, Pigale, Cartellier, and Moithe, sculptors; of the geographers D'Anville, Buache, de Lisle, Lacroix, Robert de Vaugondy, Barbier du Bocage, and Mentelle; of Arnaud, Trouchet, and Billoccocq, lawyers; of Dupont de Nemours, one of the most honorable characters of the revolution; of Dupont-du-Ferret, one of the worthiest citizens who lost his life at that time; of Herauld de Sechelles, a member of the convention, beheaded in 1793; of Lepelletier de St. Fargeau, president of the parliament, who was assassinated on the 20th of January the same year; of the unfortunate Bailly, mayor of the city, beheaded on the 9th of November; of cardinal Richelieu; Voyer d'Argenson and Metchin, deputies; Malesherbes, the advocate of Louis XVI., beheaded in 1794; of the great Conde; of marshal Catinat, prince Eugene, the duke of Orleans; of Ninon d'Enclos, marshal Augereau, who gained the battles of the bridge of Lodi, Arcola, &c.; of generals Canciaux, Baraquay, d'Hilliers, and Montholon; of the navigator Bougainville, the traveller Chardin, the printers Anisson Duperron, Pankouque, and Boisle; of John Châtel, the pupil of the Jesuits, the assassin of Henry IV., &c. &c.

Paris is situated on the first meridian according to the French measurement, 20° E. of the meridian of Ferro, and 2° 15' E. of London; in N. lat. 48° 50'. It is 294 miles S. E. of London, 678 S. S. E. of Edinburgh, 654 south-east of Dublin, 222 south of Brussels, 342 south of Amsterdam, 735 south-west of Berlin, 816 S. S. W. of Copenhagen, 1170 S. S. W. of Stockholm, 1650 south-west of Petersburg, 795 west of Dresden, 618 N. N. W. of Vienna, 378 north-west of Geneva, 1146 N. N. W. of Rome, 855 north-west of Venice, 1800 W. N. W. of Constantinople, 1362 N. N. W. of Naples, 960 N. N. E. of Madrid, 1320 north-east of Lisbon, 3900 E. N. E. of Washington, 13,563 E. N. E. of Acapulco, 7233 north-east of Lima, and 5556 W. N. W. of Pekin.

PARIS, in fabulous history, the son of Priam, king of Troy, by Hecuba, also named Alexander. He was decreed, even before his birth, to become the ruin of his country; and when his mother, in the first months of her pregnancy, had dreamed that she should bring forth a torch which would set fire to her palace, the soothsayers foretold the calamities which were to be expected from the imprudence of her future son, and which would end in the ruin of Troy. Priam, to prevent so great a calamity, ordered his slave Archelaus to destroy the child as soon as he was born. The slave only exposed the child on Mount Ida, where the shepherds of the place found him, and educated him as their own. Some say a she bear suckled him. Though educated among shepherds and peasants, he gave very early proofs of courage and intrepidity; and, from his care in protecting the flocks of Mount Ida from the rapacity of wild beasts, he was named Alexander, a helper of men. He gained the esteem of all the shepherds, and his manly deportment recommended him to Cnone, a nymph of Ida, whom he married, and with whom he lived with the most perfect tenderness. Their conjugal peace was, however, of no long duration. At the marriage of Peleus and Thetis, Ate, the goddess of discord, who had not been invited to partake of the entertainment, showed her displeasure, by throwing into the assembly of the gods who were at the celebration of the nuptials, a golden apple, on which were written the words, Let it be given to the fairest. All the goddesses claimed it as their own; the contention at first became general; but at last only three, Juno, Venus, and Minerva, wished to dispute their respective right to beauty. The gods, unwilling to become arbiters in an affair so delicate in its nature, appointed Paris to adjudge the prize. The goddesses appeared before their judge without covering or ornament, and each endeavoured by promises to influence his judgment. Juno promised him a kingdom; Minerva, wisdom and military glory; and Venus the fairest woman in the world for his wife. (Ovid. *Heroid.* 17. v. 118). After he had heard their several claims and promises, Paris adjudged the prize to Venus, and gave her the golden apple. This decision drew upon the judge and his family the resentment of the two other goddesses. Soon after, Priam proposed a contest among his sons and other princes, and promised to reward the conqueror with one of the finest bulls of Mount Ida. His emissaries were sent to procure the animal, and it was found in the possession of Paris, who reluctantly yielded it. But he went to Troy and entered the lists of the combatants. He was received with applause, and obtained the victory over his rivals, Nestor the son of Neleus, Cynus son of Neptune, Polites, Helenus, and Deiphobus, sons of Priam. He likewise obtained a superiority over Hector himself; who, enraged to see himself conquered by an unknown stranger, pursued him closely; and Paris must have fallen a victim to his rage had he not fled to the altar of Jupiter. This sacred retreat preserved his life; and Cassandra, the daughter of Priam, struck with the similarity of the features of Paris with those of her brothers,

enquired his birth and his age. From these circumstances she discovered that he was her brother, and as such introduced him to her father and to her brothers. Paris acknowledged Paris as his son, and all jealousy ceased among the brothers. Paris did not long remain inactive; he equipped a fleet, as if willing to redeem Hecuba, his father's sister, whom Hercules had carried away, and obliged to marry Telamon the son of Eacus. This was the pretended motive of his voyage, but the causes were far different. Helen was the fairest woman of the age, and Venus had promised her to him. He therefore went to Sparta, the residence of Helen, who had married Menelaus. He was received with great respect; but he abused the hospitality of Menelaus, and, while the husband was absent in Crete, persuaded Helen to elope with him, and to fly to Asia. Priam received her without difficulty, as his sister was then detained in a foreign country, and, as he wished to show himself as hostile as possible to the Greeks. This affair was soon productive of serious consequences. When Menelaus had married Helen, all her suitors had bound themselves by a solemn oath to defend her from every violence; and therefore he reminded them of their engagements, and called upon them to recover her. Upon this all Greece took up arms; Agamemnon was chosen general of the combined forces, and a regular war was begun. Paris, meanwhile, who had refused Helen to the petitions and embassies of the Greeks, armed himself, with his brothers and subjects, to oppose the enemy; but he fought with little courage, and at the very sight of Menelaus, whom he had so recently injured, his courage vanished, and he retired from the army. In a combat with Menelaus, Paris must have perished, had not Venus interfered. He wounded, however, in another battle, Machaon, Eurypylus, and Diomedes; and, according to some, he killed with an arrow the great Achilles. The death of Paris is differently related: some say he was mortally wounded by one of the poisoned arrows of Philoctetes; and that when he found himself languid by his wounds, he ordered himself to be carried to the feet of Cnone, whom he had basely abandoned, and who had foretold him that he would solicit her assistance in his dying moments. He expired before he came into the presence of Cnone, who threw herself upon his body, and stabbed herself to the heart. According to others, Paris did not immediately go to Troy when he left the Peloponnesus, but he was driven on the coasts of Egypt, where Proteus, the king of the country, detained him. He died about 1188 B. C. See *TROY*.

PARIS (Matthew), one of the best English historians, from William the Conqueror to the latter end of the reign of Henry III. Leland, his original biographer, informs us that he was a monk of St. Alban's, and that he was sent by pope Innocent to reform the monks of the convent at Holm in Norway. Bishop Bale adds, that, on account of his extraordinary gifts, he was much esteemed by Henry III., who ordered him to write the history of his reign. Fuller makes him a native of Cambridgeshire, and says, he was sent by the pope to visit the monks in the dio-

cese of Norwich. Paris died in the monastery of St. Alban's in 1259. He was a man of extraordinary knowledge for the thirteenth century; of an excellent moral character, and, as an historian, of strict integrity. His works are, 1. *Historia ab Adamo ad Conquestum Angliæ*, lib. i. MS. col. C. C. Cantab. c. ix. Most of this book is transcribed by Matthew of Westminster into the first part of his *Florilegium*. 2. *Historia Major, seu rerum Anglicanarum Historia à Gul. Conquestoris Adventu ad annum 43 Henrici III.*, &c., several times printed. 3. *Vitæ duorum Offarum, Mercie regum, S. Albani fundatorum*. 4. *Gesta 22 abbotum S. Albani*. 5. *Addimenta Chronicorum ad Hist. Majorem*: printed. 6. *Historia Minor, sive Epitome Majoris Historiæ*; MS. Besides many other things in MS.

PARIS, in botany, herb paris, or true-love, a genus of the order trigynia, and class octandria; natural order eleventh, samentaceæ: CAL. tetraphyllous; petals four, narrow in proportion; the berry quadrilocular. There is but one species, growing naturally in woods and shady places both in Scotland and England. It has a single naked stem, greenish blossoms, and bluish black berries. The leaves and berries are said to partake of the properties of opium; and the juice of the berries is useful in inflammations of the eyes. Linnæus says that the root will serve as an emetic as well as ipecacuanha, but must be taken in double the quantity. Goats and sheep eat the plant; cows, horses, and swine, refuse it.

PARIS, PLASTER OF. See PLASTER.

PARISH, *n. s. & adj.* } Fr. *paroisse*; Ital.,
PARISH'IONER, *n. s.* } Span., Port. and Barb.
Lat. *parochia*; Gr. *παροικία*, i. e. *παρα* near, and *οικος*, a house. 'A multitude of neighbours pertaining to one church,' says Minshew: hence the particular charge of 'a secular priest,' according to Dr. Johnson; a particular district of land; and, as an adjective, belonging to, appointed over, or maintained by, a parish: a parishioner is one who belongs to a particular parish.

Dametas came piping and dancing, the merriest man in a parish. Sidney.

I praise the Lord for you, and so may my parishioners; for their sons are well tutored by you. Shakspeare.

Hail, bishop Valentine, whose day this is,

All the air is thy diocese;

And all the chirping choristers

And other birds, are thy parishioners. Donne.

At every point that concerns himself, the good parishioner turns down a leaf in his heart; and rejoiceth that God's word hath pierced him, as hoping that whilst his soul smarts, it heals. Fuller.

In the greater out-parishes, many of the parishioners, through neglect, do perish. Graunt.

By the Catholick church is meant no more than the common church, into which all such persons as belonged to that parish, in which it was built, were wont to congregate. Pearson.

The tithes, his parish freely paid, he took;

But never sued, or cursed with bell or book. Dryden.

A parish priest was of the pilgrim train,

An awful, reverend, and religious man. Id.

I have deposited thirty marks, to be distributed among the poor parishioners. Addison's Spectator.

The office of the church is performed by the parish priest, at the time of his interment. Ayliffe.

Not parish clerk who calls the psalms so clear. Gay.

A man, after his natural death, was not capable of the least parish office. Arbuthnot and Pope.

The parish allowance to poor people is very seldom a comfortable maintenance. Law.

A PARISH, in law, is the precinct of a parochial church, or a circuit of ground inhabited by people who belong to one church, and are under the particular charge of its minister. The word comes from *παροικία*, habitation; or of *παρα*, near, and *οικος*, house. Du Cange observes that the name *παροικία* was anciently given to the whole territory of a bishop, and derives it from neighbourhood; because the primitive Christians, not daring to assemble openly in cities, were forced to meet secretly in neighbour houses. In the ancient church there was one large edifice in each city for the people to meet in; and this they called *parochia*, parish. But the signification of the word was afterwards enlarged, and meant a diocese, or the jurisdiction of a bishop, consisting of several churches. Du Pin observes that country parishes had not their origin before the fourth century; but those of cities are more ancient. Alexandria is said to have been divided into parishes. In the early ages of Christianity, in this island, parishes were unknown, or at least signified the same that a diocese now does. There was then no appropriation of ecclesiastical dues to any particular church; but every man was at liberty to contribute his tithes to any priest or church he pleased, but he was obliged to do it to some; or, if he made no special appropriation, they were paid to the bishop, to distribute them among the clergy, and for other pious purposes. Sir Henry Hobart maintains that parishes were first erected by the council of Lateran, held A. D. 1179. But Selden proves that the clergy lived in common, without any division of parishes, long after the time mentioned by Camden (A. D. 636); and it appears, from the Saxon laws, that parishes were in being long before the council of Lateran in 1179. The distinction of parishes occurs in the laws of king Edgar about 970. It seems pretty clear and certain, says Blackstone, that the boundaries of parishes were first ascertained by those of a manor or manors; because it very seldom happens that a manor extends itself over more than one parish, though there are often many manors in one parish. The lords, he adds, as Christianity spread, began to build churches upon their own demesnes or wastes, to accommodate their tenants in one or two adjoining lordships; and, that they might have divine service regularly performed therein, obliged all their tenants to appropriate their tithes to the maintenance of the one officiating minister, instead of leaving them at liberty to distribute them among the clergy of the diocese in general; and this tract of land, the tithes of which were so appropriated, formed a distinct parish; and this accounts for the frequent intermixture of the parishes one with another. For if a lord had a parcel of land detached from the main of his estate, but not sufficient to form a parish of itself, it was natural for him to en-

dow his newly erected church with the tithes of such lands. Extra-parochial wastes and marsh lands, when improved and drained, are by 17 Geo. II., cap. 37, to be assessed to all parochial rates in the parish next adjoining.

In every parish in England the parson has a parish-clerk under him, who is the lowest officer of the church. These were formerly clerks in orders, and their business at first was to officiate at the altar; for which they had a competent maintenance by offerings; but they are now laymen, and have certain fees with the parson on christenings, marriages, burials, &c., besides wages for their maintenance. The law looks upon them as officers for life; and they are chosen by the minister of the parish, unless there is a custom for the parishioners or churchwardens to choose them; in which case the canon cannot abrogate such custom; and, when chosen, it is to be signified, and they are to be sworn into their office by the archdeacon, for which the court of king's bench will grant a mandamus.

PARISI, ancient Britons, who inhabited the counties now called Durham, Westmoreland, and Cumberland.

PARISII, an ancient people of Gallia Celtica, who inhabited the country about the Sequana and Marona, since called the Isle of France.

PARITOR, *n. s.* Corrupted from apparitor. A beadle; the summoner of a civil court.

You shall be summoned by an host of *paritours*; you shall be sentenced in the spiritual court. *Dryden.*

PARTY, *n. s.* French *parité*; Lat. *paritas*. Equality: hence likeness; resemblance.

That Christ or his apostles ever commanded to set up such a *parity* of presbyters, and in such a way as those Scots endeavour, I think is not very disputable.

King Charles.

We may here justly tax the dishonesty and shamefulness of the mouths, who have upbraided us with the opinion of a certain stoical *parity* of sins.

Hall.

Women could not live in that *parity* and equality of expense with their husbands, as now they do.

Graunt.

Those accidental occurrences, which excited Socrates to the discovery of such an invention, might fall in with that man that is of a perfect *parity* with Socrates.

Hale.

Their agreement in essential characters makes rather an identity than a *parity*.

Glanville.

Survey the total set of animals, and we may, in their legs or organs of progression, observe an equality of length and *parity* of numeration; not any to have an odd leg, or the movers of one side not exactly answered by the other.

Browne.

By an exact *parity* of reason, we may argue, if a man has no sense of those kindnesses that pass upon him, from one like himself, whom he sees and knows, how much less shall his heart be affected with the grateful sense of his favours whom he converses with only by imperfect speculations, by the discourses of reason, or the discoveries of faith!

South.

PARIUM, in ancient geography, a noble city of Mysia Minor, with a port on the Propontis; called Adrastia by Homer, according to Pliny; according to others, it is the Paestus of Homer. It was the birth place of Neoptolemus, surnamed Glossographus.—Strabo. Here stood a Cupid, equal in workmanship to the Cnidian Venus.

PARK, *n. s. & v. a.* Sax. *peapiruc*; Goth. and Swed. *park*; Fr. *parc*; Span. *parque*, of Latin *parco*, to preserve. An enclosure in which wild animals are preserved, 'which a man may have,' in England, 'by prescription of the king's grant,' say the law authorities. See below. To park is to enclose as in a park.

How are we *parked*, and bounded in a pale!

A little herd of England's tim'rous deer,

Mazed with a yelping kennel of French curs.

Shakespeare.

We have *parks* and inclosures of all sorts of beasts and birds, which we use not only for view or rareness, but likewise for dissections and trials. *Bacon.*

The man of wealth and pride

Takes up a place that many poor supply'd;
Space for his lake, his *park's* extended bounds,
Space for his horses, equipage, and hounds.

Goldsmith.

PARK, an extent of ground enclosed with walls and palisades, and stored with beasts of chase. In their villas the ancient Romans were fond of possessing capabilities for enjoying the pleasures of the chase; to which they were greatly addicted, among other reasons, from the excellent effect produced by robust and manly exercise upon their bodies, and through that medium upon their minds likewise. For this purpose, then, parks were generally attached to their country houses. We find one represented in a painting on the ceiling of the tomb of the Pisones, near the Flaminian way. Originally hares constituted the only game placed therein, and hence they were denominated leporaria, from lepus, a hare. At length, however, other game were introduced; such as stags, wild boars, wild goats, roebucks, &c.; and the extent of the enclosures was proportionately enlarged. Fulvius Lupinus was one of the first Romans who greatly increased his domain in this way; his park stretched over forty acres. Pompey and Hortensius followed this example, the latter establishing a park of upwards of fifty acres.

Mr. Loudon, in his Treatise on Country Residences, observes that parks should be of two descriptions; those attached to small houses, wherein regard should chiefly be directed to the value of the pasture, and where the pasturing animals are sheep, horses, oxen, &c.; and, secondly, such as, belonging to splendid mansions, demand more especially grandeur of character and distribution. In the former species, the surface of the ground should receive its principal characteristic from groups of trees, or gentle walks, conducting the promenade from vista to vista, so as to produce as great a variety of effects as the nature of the scenery around, and the contracted space the artist has to work in, will possibly admit. Indeed, by circuitous paths, and skilful disposition of trees, this kind of park will often deceive the eye of the spectator with respect to its actual extent. A level and monotonous surface, such as we frequently are compelled to notice, containing a walk round, and dotted with sophisticated-looking clumps, at regular distances, can, it will be obvious, never appear larger than it really is; but a very few acres, laid out in the manner hinted at by us above, may even be made to appear almost boundless; every step presenting a novel combi-

nation, arising from the judiciously planted masses of trees, and the sight of the cattle caught by the eye at different points through the intermediate foliage.

In the latter description of park another principle must be proposed and followed. Here that style of distribution and planting denominated the forest style is in place. Long avenues; open glades stretching out in ample proportions; broken ground, set with trees, shrubs, underwood, furze, fern, &c., is admissible, and indeed desirable. The grazing animals, in a domain of this order, should be deer or horses, intermixed with a few wild cattle. It has been suggested that, as parks form the prominent features of many capital residences, were the appearance of wildness and forest scenery just alluded to given to them, the effect would be most grand and imposing, not only as regarded the actual domain of which they formed a part, but viewed with reference to the whole surrounding country. As it is, the seats of our principal men of rank and fortune possess many very noble specimens of enclosures of this kind—among which we will enumerate, by the way, those of Blenheim, Knole, Stowe, Donnington, Bow Wood, &c. &c. Among the royal demesnes, Windsor Park stands proudly pre-eminent, and is, indeed, one of the noblest in Europe, and every way worthy to encircle the castle of an English monarch.

In the metropolis there are several attached to the crown, but which are become, by prescription, almost the common property of the nation, contributing inestimably, not merely to the amusement and relaxation, but to the health and comfort of the immense population of the capital. Caroline, the queen of George II., once enquired of the first Mr. Pitt how much it would cost her to shut the parks. He replied, 'Three crowns, your majesty,' and she took the hint. To Hyde Park, St. James's Park, and the Green Park, there has, within these few years, been most munificently added the Regent's Park. Thus a vast space, close by the metropolis, is not only preserved from the encroachment of mean buildings, but laid out with groves, lakes, and villas, with their separate pleasure grounds, while through the whole place there is a winding road, which commands at every turn some fresh features of an extensive country prospect. This is indeed a desirable appendage to so vast a town as London, more especially as the rage for building fills every pleasant outlet with bricks, mortar, rubbish, and eternal scaffold-poles, which, whether you walk east, west, north, or south, seem to be running after you.

'The noble appropriation of the district of which we are now speaking is not so much a change as a restoration. It was formerly a park, and had a royal palace in it, where, we believe, queen Elizabeth occasionally resided. It was disparked by Oliver Cromwell, who settled it on colonel Thomas Harrison's regiment of dragoons for their pay; but, at the restoration of Charles II., it passed into the hands of other possessors, from which time it has descended through different proprietors, till, at length, it has reverted to the crown, by whose public spirit a magnificent park is secured to the inhabitants of Lon-

don. The expense of its planting, &c., have been enormous; but money cannot be better laid out than on purposes of this lasting benefit and national ornament.

'The plan and size of the park are in every respect worthy of the nation. It is larger than Hyde Park, St. James's, and the Green Park together; and the trees planted in it about ten years ago are already becoming umbrageous. The water is very extensive. As you are rowed on it, the variety of views you come upon is admirable: sometimes you are in a narrow stream, closely overhung by the branches of trees; presently you open upon a wide sheet of water, like a lake, with swans sunning themselves on its bosom; by and by your boat floats near the edge of a smooth lawn fronting one of the villas; and then again you catch the perspective of a range of superb edifices, the elevation of which is contrived to have the effect of one palace. The park, in fact, is to be belted with groups of these mansions, entirely excluding all sight of the streets. Many of them are finished, and give a satisfactory earnest of the splendid spirit in which the whole is to be accomplished. There will be nothing like it in Europe. The villas in the interior of the park are planted out from the view of each other, so that the inhabitant of each seems, in his prospect, to be the sole lord of the surrounding picturesque scenery.'

No man can erect a park without license under the broad seal; for the common law does not encourage matter of pleasure which brings no profit to the commonwealth. But there may be a park in reputation erected without any lawful warrant; and the owner may bring his action against persons killing his deer. To a park, three things are required:—1. A grant thereof. 2. Enclosures by pale, wall, or hedge. 3. Beasts of a park; such as the buck, doe, &c. And, where all the deer are destroyed, it shall no more be counted a park; for a park consists of vert, venison, and enclosure: and, if it is determined in any of them, it is a total disparking. Parks, as well as chases, are subject to the common law, and are not governed by the forest law. See FOREST.

PARK OF ARTILLERY. See ARTILLERY.

PARK OF PROVISIONS, in military affairs, the place where the sutlers pitch their tent in the rear, and sell their provisions to the soldiers. Likewise that place where the bread-waggons are drawn up, and where the troops receive their ammunition-bread, being the store of the army.

PARK (Mungo), the celebrated traveller, was born at Fowlshiels, in the county of Selkirk, on the 10th of September, 1771. His father was a respectable yeoman, and held a farm under the duke of Buccleuch. At the grammar school of Selkirk, where he was educated, the son is said to have shown extraordinary application to study, and was always at the head of his class. This inspired his father with the design of educating him for the church; he himself, however, made choice of the medical profession; and, at the age of fifteen, was bound apprentice to Mr. Thomas Anderson, a surgeon of Selkirk, with whom he spent three years. In 1789 he removed to Edinburgh, and attended three successive sessions the lectures delivered

at that great seminary of medical learning. Mr. Park pursued with assiduity all the studies subservient to his profession; but his peculiar attachment was to the science of botany. For this he seems to have been in a great measure indebted to his intimacy with his brother-in-law, Mr. James Dickson, who became in London, under the patronage of Sir Joseph Banks, one of the most eminent English botanists. Park, having come to London to seek employment in his profession, found in Mr. Dickson a most valuable friend. He was at once introduced to Sir Joseph Banks, through whom he obtained the appointment of assistant surgeon to the Worcester East Indiaman, and made a voyage to Bencoolen in Sumatra, during which he collected a number of specimens in botany and natural history, an account of which is inserted in the Transactions of the Linnæan Society. On the 4th of November, 1794, he read a paper before the Society, containing a description of eight new species of fish from Sumatra. What Mr. Park's views now were does not certainly appear; but the crisis had arrived which was to give a decisive turn to his future life. The association for promoting discoveries in Africa had, in the course of a few years, made a number of important researches in the interior of that great continent; and it became at this time their main object to ascertain the course of the Niger, and the present state of the great central emporium, Tombuctoo; Sir Joseph Banks, who was one of the most active members of the association, fixed upon Park as the most proper person for entering upon this career of adventure; and he was readily accepted. On the 22d of May, 1795, he set sail from Portsmouth, on board the Endeavour, an African trader, and arrived in the Gambia on the 21st of the following month. For the results of the expedition we refer our readers to the article AFRICA. After an absence from England of two years and seven months, Mr. Park arrived at Falmouth on the 22d of December, 1797, and reached London on the morning of the 25th. In June, 1798, he went down to reside with his mother and other relations at Fowlshields, where he spent the summer and autumn in assiduous labor upon the interesting volume of Travels, which he afterwards published, and in which he was assisted by Mr. Bryan Edwards. It is needless to state how universally this volume was read. After its publication Mr. Park returned to Scotland, and formed a matrimonial connection with Miss Anderson, daughter of the gentleman with whom he had served his apprenticeship. With a character so active and adventurous, it will not appear surprising that Park should be ready to enter anew upon the career in which he had already appeared so brilliantly. On the signing of the preliminaries of peace, in 1801, he received a letter from Sir Joseph Banks, intimating that the plan of penetrating into the interior of Africa would be revived; that there were hopes of its receiving the support of government; in which case the association would not hesitate to recommend him as the proper person for conducting it. He heard nothing farther till the autumn of 1803,

when he was invited to London to receive a proposition from lord Hobart to the above effect. Although he asked a short delay, and consulted some of his friends, he never seems, in his own mind, to have hesitated a moment as to the acceptance of the offer. Owing to changes in the ministry, however, and the usual delays of office, the expedition was delayed till the beginning of 1804, when, on the 30th of January, he set sail from Portsmouth. On the 8th of March he arrived at St. Jago, one of the Cape de Verd Islands; and on the 28th arrived at Goree. Here he had received authority to enlist a detachment of the garrison, and take the command of them. The promise of double pay and discharge soon gave him the choice of the soldiery; and he engaged upwards of forty to attend him in his expedition. He seems now to have been in the highest spirits, and looked forward to success with the utmost confidence. But, notwithstanding these fair promises of success, never, in fact, was an expedition undertaken under less fortunate auspices. Park's hopes of reaching the Niger in safety depended entirely upon his doing so previous to the commencement of the rainy season, the effects of which are always fatal to Europeans. From unexpected delays, however, half his journey had not been completed when the rains began to be felt. In a few days twelve men were sick; and every day added to the distress, till the whole party felt the influence of this destructive season. One after another, either stopped at the villages, or lay down on the road, refusing to proceed; and, of forty-four men who left Goree, only nine arrived at the Niger, all sick, and several in a state of mental derangement. Nothing, however, could shake Mr. Park's resolution. He immediately began to negotiate with the king of Bumbarra, for permission to build a boat for the purpose of proceeding down the Niger. Having obtained this, he constructed the vessel chiefly with his own hands. Mr. Park accordingly set sail; but Mr. Maxwell, the governor of Goree, in vain looked for any intelligence of his progress. At length unfavorable reports began to come down to the coast; and, these continually increasing, the governor felt the duty of making enquiry respecting his fate. He happened fortunately to engage Isaaco, the guide who had followed him to the Niger. This person, in the course of his mission, fell in with Amadi Fatouma, whom Mr. Park had taken with him down the river. From him he received a narrative purporting to contain the only particulars of the death of this distinguished traveller, which have ever transpired. It appears that Park had delivered some presents to the chief of Yaour, to be transmitted to the king, who lived at a little distance. The chief, having learned that Mr. Park was not to return, conceived the treacherous design of appropriating the presents to himself. Amadi Fatouma then relates: 'I went to the king to pay my respects to him. On entering the house, I found two men who came on horseback; they were sent by the chief of Yaour. They said to the king, 'we are sent by the chief of Yaour to let you know that the white men went away without giving you or him (the chief

any thing; they have a great many things with them, and we have received nothing from them; and this Amadi Fatcuma now before you is a bad man, and has likewise made a fool of you both.' The king immediately ordered me to be put in irons; which was accordingly done; and every thing I had taken from me; some were for killing me, and some for preserving my life. The next morning early, the king sent an army to a village called Boussa, near the river side. There is before this village a rock across the whole breadth of the river. One part of the rock is very high; there is a large opening in that rock in the form of a door, which is the only passage for the water to pass through; the tide current is here very strong. This army went and took possession of the top of this opening. Mr. Park came thither after the army had posted itself; he nevertheless attempted to pass. The people began to attack him, throwing lances, pikes, arrows, and stones. Mr. Park defended himself for a long time; two of his slaves at the stern of the canoe were killed; they threw every thing they had in the canoe into the river, and kept firing; but being overpowered by numbers and fatigue, and unable to keep up the canoe against the current, and there being no probability of escaping, Mr. Park took hold of one of the white men, and jumped into the water; Martyn did the same, and they were drowned in the stream in attempting to escape. The only slave remaining in the boat, seeing the natives persist in throwing weapons at the canoe, without ceasing, stood up and said to them, 'Stop throwing now; you see nothing in the canoe, and nobody but myself; therefore cease. Take me and the canoe, but don't kill me.' They took possession of the canoe and the man, and carried them to the king. I was kept in irons three months; the king released me and gave me a slave (woman). I immediately went to the slave taken in the canoe, who told me in what manner Mr. Park and all of them had died, and what I have related above. I asked him if he was sure nothing had been found in the canoe after its capture; he said that nothing remained in the canoe but himself and a sword-belt. I asked him where the sword-belt was; he said the king took it, and had made a girth for his horse with it.' Serious doubts have been raised concerning the authenticity of this narrative; but no reasonable hope can now be entertained that Mr. Park has not, in some way or other, perished in his voyage down the Niger. An account of his second journey, so far as his own narrative extended, with a memoir of his life, by Mr. Wishaw, was published in 1815.

PARKER (Henry), lord Morley, a noble author, who flourished in the reign of Henry VIII., and wrote several works, a list of which may be seen in Mr. Walpole's Catalogue of Royal and Noble Authors, vol. i. He was one of the barons who signed the memorable letter to pope Clement VII., threatening him with the loss of his supremacy in England, unless he proceeded to despatch the king's divorce against queen Catharine.

PARKER (Matthew), the second protestant archbishop of Canterbury, was born at Norwich

in 1504, in the reign of Henry VII. His father died when he was twelve years old; but his mother, at the age of seventeen, sent him to Corpus-Christi College in Cambridge, where, in 1523; he took his degree of A. B. In 1527 he was ordained, created A. M., and chosen fellow. In 1533 or 1534 he was made chaplain to queen Anne Boleyn, who obtained for him the deanery of Stoke-Clare in Suffolk, where he founded a grammar school. After her death Henry made him his own chaplain, and in 1541 prebend of Ely. In 1544 he was elected master of Corpus-Christi College; and, in 1555, vice-chancellor of the university. In 1547 he lost the deanery of Stoke, by the dissolution of the college; and married the daughter of Robert Harlestone, a Norfolk gentleman. In 1552 he was nominated by Edward VI. dean of Lincoln, which enabled him to live in great affluence: but Mary I. was hardly seated on the throne before he was deprived of every thing, and obliged to live in obscurity, often changing his place of abode to avoid the fate of the other reformers. Queen Elizabeth succeeded in 1558; and in 1559 Dr. Parker, from indigence and obscurity, was at once raised to the see of Canterbury; an honor which he neither solicited nor desired. He was consecrated December 17th, 1559, by the four surviving reformed bishops. In this high station he acted with spirit and propriety. He visited his cathedral and diocese in 1560, 1565, 1570, and 1573. He repaired and beautified his palaces at Lambeth and Canterbury, at an expense of above £1400 sterling, which is at least equal to ten times the sum now. He founded several scholarships in Corpus-Christi College in Cambridge, and gave large presents of plate to that and other colleges in this university. He gave 100 volumes to the public library. He likewise founded a free-school at Rochdale in Lancashire. He took care to have the sees filled with pious and learned men; and, considering the great want of Bibles in many places, he, with the assistance of other learned men, improved the English translation, had it printed on a large paper, and dispersed through the kingdom. This worthy prelate died in 1575, aged seventy-two, and was buried in his own chapel at Lambeth. He was pious without affectation or austerity, cheerful and contented in the midst of adversity, and beneficent beyond example. He wrote several works; and published those of four of our best historians; Matthew of Westminster, Matthew Paris. Asser's Life of King Alfred, and Thomas Walsingham. He also translated the Psalter. This version was printed, but without a name, which led the learned Wood to attribute it to an obscure poet of the name of Keeper.

PARKER (John), an eminent lawyer of the seventeenth century, who practised at Northampton about 1640. He was educated in the Temple; and, joining the party of the parliament, was made a member of the high court of justice in 1649, where he gave sentence against the three lords, Capel, Holland, and Hamilton, who were beheaded. During Cromwell's usurpation he was made an assistant committee-man for his county. In 1630 he published a book in.

defence of the new government, as a commonwealth, without a king or house of lords. In June 1655, when Cromwell was declared protector, he was appointed a commissioner for removing obstructions at Worcester House in the Strand, and was sworn serjeant at law next day. In January 1659 he was appointed one of the barons of the exchequer by the rump parliament; but, upon a complaint, was displaced. However, he was again regularly made serjeant at law, on the recommendation of chancellor Hyde, after the Restoration.

PARKER (Samuel), D.D., an English clergyman, son of the preceding, who became bishop of Oxford. He was born September 1640, at Northampton, and educated among the puritans in Northampton; whence, being fit for the university, he was sent to Wadham College in Oxford, and admitted in 1659 under a presbyterian tutor. Here he led a strict and religious life, and took the degree of A.B. February 28th, 1660. Upon the Restoration he hesitated which party to join; but, continuing publicly to speak against episcopacy, he was discountenanced by the new warden Dr. Blandford, who had been appointed to that office upon the dawn of the Restoration in 1659. Upon this he removed to Trinity College, where, by the advice of Dr. Ralph Ruthwell, then a senior fellow of that society, he was 'rescued from the prejudices of his education,' which he publicly avowed in print. He then became a zealous Anti-puritan, and for many years acted the part of what was then called a true son of the church. In this temper, having taken the degree of M.A. in 1663, he entered into holy orders, went to London, and became chaplain to a nobleman, continuing to display his talents at the expense of his old friends the Presbyterians, Independents, &c. In 1665 he published some philosophical essays, and was elected F.R.S. These essays he dedicated to Sheldon, archbishop of Canterbury, who became his patron; and, in 1667, made him his chaplain. He now left Oxford, and resided at Lambeth with his patron; who, in 1670, made him archdeacon of Canterbury. In November 1670 he joined the train of William prince of Orange, who visited Cambridge, and had the degree of D.D. conferred upon him there. In November 1672 he was installed a prebendary of Canterbury; and was made rector of Ickham and Chatham in Kent by the archbishop. He was very obsequious to the court during the reign of Charles II.; and, upon the accession of James II., he continued the same servile complaisance; and soon reaped the fruits of it in the bishopric of Oxford, to which he was appointed by James II. in 1686, being allowed to hold the archdeaconry of Canterbury in commendam. He was likewise made a privy counsellor; and, by a royal mandamus, president of Magdalen College in Oxford. He died in Magdalen College, March 20th, 1687. He sent a Discourse to James, persuading him to embrace the Protestant religion, with a letter to the same purpose, which was printed in London in 1690, 4to.

PARKER (Richard), an English sailor, the leader of a dangerous mutiny which took place on board the squadron of lord Bridport, in the eventful

spring of 1797. He was born at Exeter about 1760, and, having received a decent education, entered into the navy, and served during the American war. On peace taking place he married a woman with some property, which he dissipated, and was imprisoned for debt at Edinburgh. Being at length released, he entered on board the royal fleet at the Nore, as a common sailor, where he soon displayed a spirit of insubordination; but acquired the confidence of the men, and, on the mutiny arising, was appointed their 'admiral.' When the revolt was suppressed, through the prudent management of lord Howe, Parker was put in confinement, and, being tried by a court martial at Sheerness, was hanged on board the Sandwich, to which ship he had belonged. His body was afterwards exposed on the coast of the isle of Sheppey. He suffered June 30th, 1795, displaying great calmness of mind.

PARKES (Samuel), a late ingenious professor of chemistry, was born at Stourbridge, in Worcestershire, in 1759, and educated under Dr. Addington at Market Harborough. In 1806 he first published his *Chemical Catechism*; of which many editions have appeared, and was long eminent as a practical chemist. This work was followed in 1808 by an *Essay on the Utility of Chemistry in the Arts and Manufactures*; and in 1809 by *Rudiments of Chemistry*, illustrated by examples; an abridgment of his first treatise, which he was induced to publish, on account of an attempt to pirate the work. His last production was, *Chemical Essays*, principally relating to the Arts and Manufactures of the British dominions, printed in 1815, in eight vols. 8vo. Mr. Parkes was a fellow of the Society of Arts, and of various other literary and philosophical associations. He died at his house in Mecklenburg Square, London, December 23d, 1815.

PARKHURST (John), a learned divine and lexicographer, born at London; and educated at Clare-Hall, Cambridge; of which he was admitted fellow in 1751, and took his degrees of B. A. and M. A. He settled at Epsom in Surry, was the intimate friend of bishop Horne, and adopted the opinions of Hutchinson. He published, 1. *A Greek and English Lexicon*, 4to.; 2. *A Hebrew and English Lexicon*, 4to.; both of which are very useful; 3. *An Answer to Dr. Priestley on the pre-existence of Christ*. He died in 1797.

PARKINSON (John), an eminent English botanist, born in 1567. He was the first who described and figured the subjects of the flower garden singly. His *Theatrum Botanicum* contained a more copious history of medicinal plants than any former publication.

PARKINSONIA, so called in honor of the above botanist; a genus of the monogynia order and decandria class of plants: natural order thirty-third, *lomentaceæ*: *CAL.* quinquefid: petals five, all oval except the lowest, which is reniform; style none; the legumen monihform. We know but one species, which is very common in the Spanish West Indies, and has lately been introduced into the English settlements, for the beauty and sweetness of its flowers. In the

countries where it grows naturally it rises to a tree of twenty or more feet high, and bears long slender bunches of yellow flowers, which have a most agreeable sweet scent.

PARLE, *n. s.* } Fr. *parler*. Conver-
PARLEY, *v. a. & n. s.* } sation; negotiation;
talk; oral treaty (obsolete): to parley is to treat or discuss a thing orally: as a substantive it is a modern word for parle.

Seek rather by *parley* to recover them than by the sword. *Sidney.*

A Turk desired the captain to send some, with whom they might more conveniently *parley*.
Knolles's History.

Of all the gentlemen,
That every day with *parle* encounter me,
In thy opinion, which is worthiest love?

Shakspeare.

Our trumpet called you to this general *parle*. *Id.*

Summon a *parley*, we will talk with him. *Id.*

The bishop, by a *parle*, is, with a show
Of combination, cunningly betrayed. *Daniel.*

Parley and holding intelligence with guilt in the most trivial things, he pronounced as treason to ourselves, as well as unto God. *Fell.*

No gentle means could be essayed;
'Twas beyond *parley* when the siege was laid.
Dryden.

Force never yet a generous heart did gain;
We yield on *parley*, but are stormed in vain. *Id.*

Why meet we thus like wrangling advocates,
To urge the justice of our cause with words?
I hate this *parle*: 'tis tame: if we must meet,
Give me my arms. *Rowe's Ambitious Step-mother.*

Yet when some better fated youth
Shall with his am'rous *parley* move thee,
Reflect one moment on his truth,
Who, dying thus, persists to love thee. *Prior.*

Let us resolve never to have any *parley* with our
lusts, but to make some considerable progress in our
repentance. *Calamy.*

He *parleys* with her awhile, as imagining she would
advise him to proceed. *Broome.*

Strange is thy form, but more thy words are
strange—

Fearful it seems to hold this *parley* with thee.
Tell me thy race and country. *Maturin.*

PARLEY, in war, is a conference with an
enemy. Hence to beat or sound a *parley*, is to
give a signal for holding such a conference by
beat of drum, or sound of trumpet.

PARLIAMENT, *n. s. & adj.* } Fr. *parle-*
PARLIAMEN'TARY. } ment; Ital. &

Span. *parlamento*; Barb. Lat. *parliamentum*; 'a
parlare la mente, says Minshew, after Coke, to
speak judiciously his mind!' A high court of
debate and appeal on public affairs; in the
United Kingdom it signifies the assembly of king,
lords, and commons, 'the court of all others the
highest, and of greatest authority': parliamentary
is, enacted by, pertaining to, or customary in,
parliament.

A member of *parliament* is originally to be tender
of his own liberty, that other men may the better
trust him with theirs. *Saville.*

The king is fled to London,
To call a present court of *parliament*.
Shakspeare.

Far be the thought of this from Henry's heart,
To make a shambles of the *parliament* house. *Id.*

The true use of *parliaments* is very excellent; and
be often called, and continued as long as is neces-
sary. *Bacon.*

To the three first titles of the two houses, or lines,
and conquest, were added two more; the authorities
parliamentary and *papal*. *Id.*

I thought the right way of *parliaments* the most
safe for my crown, as best pleasing to my people.

King Charles.

Many things, that obtain as common law, had
their original by *parliamentary* acts or constitutions,
made in writings by the king, lords, and commons.

Hale.

These are mob readers: if Virgil and Marial
stood for *parliament* men, we know who would carry
it. *Dryden.*

Credit to run ten millions in debt, without *parlia-*
mentary security, I think to be dangerous and illegal.
Swift.

We assemble *parliaments* and councils, to have the
benefit of their collected wisdom; but we necessa-
rily have, at the same time, the inconveniences of
their collected passions, prejudices, and private in-
terests. *Franklin.*

THE PARLIAMENT is the grand assembly of
the three states of this kingdom, summoned to-
gether by the king's authority, to consider of
matters relating to the public welfare, particularly
to enact and repeal laws. The original or first
institution of parliament lies so far hidden in
the dark ages of antiquity, that the tracing of it
out is equally difficult and uncertain. The word
parliament is, comparatively, of modern date;
derived from the French *parler*, and signifying
the place where they met and spoke, or conferred
together. It was first applied to general assem-
blies of the states under Louis VII. in France,
about the middle of the twelfth century. But
it is certain that long before the Norman con-
quest all matters of importance were debated
and settled in the great councils of the realm; a
practice which seems to have been universal
among the northern nations, particularly the
Germans, and carried by them into all the
countries of Europe, which they over-ran at the
dissolution of the Roman empire. Relics of
this constitution, under various modifications
and changes, are still to be met with in the diets
of Poland, Germany, and Sweden, and formerly
in the assembly of the states in France; for what
was there lately called the parliament was only
the supreme court of justice, consisting of the
peers, certain dignified ecclesiastics, and judges;
which was neither in practice, nor supposed to
be in theory, a general council of the realm.

In England, this general council hath been
held immemorably, under the several names of
michel synoth, or great council; michel gemote,
or great meeting; and more frequently writena
gemote, or the meeting of wise men. It was also
styled in Latin, commune concilium regni, mag-
num concilium regis, curia magna, conventus
magnatum vel procerum, assisa generalis, and
sometimes communitas regni Angliæ. We have
instances of its meeting to order the affairs of
the kingdom, to make new laws, and to amend
the old; or, as Fleta expresses it, novis injuriis
emersis nova constituere remedia, so early as the
reign of Ina, king of the West Saxons; Ossa,
king of the Mercians; and Ethelbert, king of
Kent, in the several kingdoms of the heptarchy.

And after their union, the Mirror informs us that king Alfred ordained, for a perpetual usage, that these councils should meet twice in the year, or oftener, if need be, to treat of the government of God's people; how they should keep themselves from sin, should live in quiet, and should receive right.' The subsequent Saxon and Danish monarchs held frequent councils of this sort, as appears from their codes of laws; the titles whereof usually speak them to be enacted, either by the king, with the advice of his wittena gemote, as *Hæc sunt instituta, quæ Edgarus rex consilio sapientum suorum instituit*: or to be enacted by those sages with the advice of the king; as *Hæc sunt iudicia quæ sapientes, consilio regis Ethelstani, instituerunt*; or, lastly, to be enacted by them both together, as *Hæc sunt institutiones quas rex Edmundus et episcopi sui, cum sapientibus suis, instituerunt*. These great councils were also occasionally held under the first princes of the Norman line. Glanville, who wrote in the reign of Henry II., speaking of the particular amount of an amercement in the sheriff's court, says, it never yet had been ascertained by the general assize or assembly, but was left to the custom of particular counties. Here the general assize is spoken of as a meeting well known, and its statutes or decisions are put in a manifest contradistinction to custom, or the common law. And in Edward III.'s time, an act of parliament, made in the reign of William I., was pleaded in the case of the abbey of St. Edmund's Bury; and judicially allowed by the court. Hence it indisputably appears that parliaments, or general councils, are coeval with the kingdom itself. How those parliaments were constituted and composed has been matter of great dispute among our learned antiquarians; whether the commons were summoned at all; or at what period they began to form a distinct assembly. But, waiving these controversies, it is generally agreed that, in the main, the constitution of parliament, as it now stands, was marked out so long ago as the seventeenth year of king John, A.D. 1215, in the great charter granted by that prince; wherein he promises to summon all archbishops, bishops, abbots, earls, and greater barons, personally; and all other tenants in chief under the crown, by the sheriff and bailiffs; to meet at a certain place, with forty days' notice, to 'assess aids and scutages when necessary. See *MAGNA CHARTA*. And this constitution has subsisted in fact at least from 1266, 49 Henry III., there being still extant writs of that date, to summon knights, citizens, and burgesses to parliament.

We proceed, therefore, to enquire, wherein consists this constitution of parliament, as it now stands, and has stood, for at least 500 years: 1. As to the manner and time of its assembling: 2. Its constituent parts: 3. The laws and customs relating to parliament: 4. The methods of proceeding; and of making statutes, in both houses; and, 5. The manner of the parliament's adjournment, prorogation, and dissolution.

I. The parliament is regularly *summoned* by the king's writ or letter, issued out of chancery by advice of the privy council, at least forty days before it begins to sit. It is a branch of the

royal prerogative that no parliament can be convened by its own authority, or by the authority of any, except the king alone. And this prerogative is founded upon very good reason. For, supposing it had a right to meet spontaneously, without being called together, it is impossible to conceive that all the members of each of the houses would agree unanimously upon the proper time and place of meeting; and if half of the members met, and half absented themselves, who shall determine which is really the legislative body, the part assembled, or that which stays away? It is therefore necessary that the parliament should be called together at a determinate time and place; and highly becoming its dignity and independence that it should be called together by none but one of its own constituent parts: and, of the three constituent parts, this office can only appertain to the king; as he is a single person, whose will may be uniform and steady; the first person in the nation being superior to both houses in dignity, and the only branch of the legislature that has a separate existence, and is capable of performing any act at a time when no parliament is in being. Nor is it any exception to this rule that, by some modern statutes, on the demise of a king or queen, if there be then no parliament in being, the last parliament revives, and is to sit again for six months, unless dissolved by the successor; for this revived parliament must have been originally summoned by the crown. It is true that the convention parliament which restored King Charles II. met above a month before his return; the lords by their own authority, and the commons in pursuance of writs issued in the name of the keepers of the liberty of England by authority of parliament; and that the said parliament sat till the 29th of December, full seven months after the Restoration, and enacted many laws, several of which are still in force. But this was for the necessity of the thing, which supersedes all law; for, if they had not so met, it was morally impossible that the kingdom should have been settled in peace. And the first thing done after the king's return was to pass an act declaring this to be a good parliament, notwithstanding the defect of the king's writ: so that, as the royal prerogative was chiefly wounded by their so meeting, and as the king himself, who alone had a right to object, consented to waive the objection, this cannot be drawn into an example in prejudice of the rights of the crown. Besides, it was at that time a great doubt among the lawyers, whether even this healing act made it a good parliament, and held by very many in the negative; though it seems to have been too nice a scruple. And yet, out of abundant caution, it was thought necessary to confirm its acts in the next parliament by stat. 13 Car. II. c. 7 and c. 14. It is likewise true, at the time of the Revolution, A.D. 1688, the lords and commons, by their own authority, and upon the summons of the prince of Orange (afterwards king William III.), met in a convention, and therein disposed of the crown and kingdom. But this assembling was upon a like principle of necessity as at the Restoration; that is, upon a full conviction that king James II. had abdicated the

government, and that the throne was thereby vacant: which supposition of the individual members was confirmed by their concurrent resolution, when they actually came together. And, in such a case as the palpable vacancy of a throne, it follows, *ex necessitate rei*, that the form of the royal writs must be laid aside, otherwise no parliament can ever meet again. For let us put another possible case, and suppose, for the sake of argument, that the whole royal line should at any time fail, and become extinct, which would indisputably vacate the throne: in this situation it seems reasonable to presume that the body of the nation, consisting of lords and commons, would have a right to meet and settle the government; otherwise there must be no government at all. And upon this and no other principle did the convention in 1688 assemble. The vacancy of the throne was precedent to their meeting without any royal summons, not a consequence of it. They did not assemble without writ, and then make the throne vacant; but the throne being previously vacant, by the king's abdication, they assembled without writ, as they must do if they assembled at all. Had the throne been full their meeting would not have been regular; but, as it was empty, such meeting became absolutely necessary. And accordingly it is declared by statute, 1 W. & M. stat. 1. c. 1, that this convention was really the two houses of parliament, notwithstanding the want of writs, or other defects of form. So that, notwithstanding these two capital exceptions, which were justifiable only on a principle of necessity (and each of which, by the way, induced a revolution in the government), the rule laid down is in general certain, that the king only can convoke a parliament. And this, by the ancient statutes of the realm, he is bound to do 'every year, or oftener if need be.' Not that he is, or ever was, obliged by these statutes to call a new parliament every year; but only to permit a parliament annually for the redress of grievances, and despatch of business, if need be. These last words are so loose and vague, that such of our monarchs as were inclined to govern without parliaments neglected the convoking them, sometimes for a very considerable period, under pretence that there was no need of them. But, to remedy this, by stat. 16 Car. II. c. 1, it is enacted, that the sitting and holding of parliaments shall not be intermitted above three years at the most. And by stat. 1 W. & M., stat. 2, c. 2, it is declared to be one of the rights of the people, that for redress of all grievances, and for the amending, strengthening, and preserving the laws, parliaments ought to be held frequently. And this indefinite frequency is again reduced to a certainty by stat. 6 W. & M., c. 2, which enacts, as the statute of Charles II. had done before, that the new parliament shall be called within three years after the determination of the former.

II. These are the king's majesty, sitting there in his royal political capacity, and the three estates of the realm; the lords spiritual, the lords temporal (who sit together with the king in one house); and the commons, who sit by themselves in another. And the king and these three estates

together form the great corporation or body politic of the kingdom, of which the king is said to be *caput, principium, et finis*. For upon their coming together the king meets them, either in person or by representation, without which there can be no beginning of a parliament; and he also has alone the power of dissolving them. It is highly necessary, for preserving the balance of the constitution, that the executive power should be a branch, though not the whole, of the legislature. The total union of them, we have seen, would be productive of tyranny; the total disjunction of them, for the present, would in the end produce the same effects, by causing that union against which it seems to provide. The legislature would soon become tyrannical, by making continual encroachments, and gradually assuming to itself the rights of the executive power. Thus the long parliament of Charles I. while it acted in a constitutional manner, with the royal concurrence, redressed many heavy grievances, and established many salutary laws. But when the two houses assumed the power of legislation, in exclusion of the royal authority, they soon after assumed likewise the reins of administration; and, in consequence of these united powers, overturned both church and state, and established a worse oppression than any they pretended to remedy. To hinder therefore any such encroachments, the king is himself a part of the parliament; and as this is the reason of his being so, very properly, therefore, the share of legislation which the constitution has placed in the crown consists in the power of rejecting rather than resolving; this being sufficient to answer the end proposed. For we may apply to the royal negative, in this instance, what Cicero observes of the negative of the Roman tribunes, that the crown has not any power of doing wrong, but merely of preventing wrong from being done. The crown cannot begin of itself any alterations in the present established law; but it may approve or disapprove of the alterations suggested and consented to by the two houses. The legislature, therefore, cannot abridge the executive power of any rights which it now has by law, without its own consent; since the law must perpetually stand as it now does, unless all the powers will agree to alter it. And herein, indeed, consists the true excellence of the British government, that all the parts of it form a mutual check upon each other. In the legislature, the people are a check upon the nobility, and the nobility a check upon the people, by the mutual privilege of rejecting what the other has resolved; while the king is a check upon both, which preserves the executive power from encroachments. And this very executive power is again checked and kept within due bounds by the two houses, through the privilege they have of enquiring into, impeaching, and punishing the conduct (not indeed of the king, which would destroy his constitutional independence; but which is more beneficial to the public) of his evil and pernicious counsellors. Thus every branch of our civil polity supports and is supported, regulates and is regulated, by the rest: for the two houses naturally drawing in two directions of opposite interest, and the

prerogative in another still different from them both, they mutually keep each other from exceeding their proper limits; while the whole is prevented from separation, and artificially connected together, by the mixed nature of the crown, which is a part of the legislative, and the sole executive magistrate. Like three distinct powers in mechanics, they jointly impel the machine of government in a direction different from what either, acting by itself, would have done; but at the same time in a direction partaking of each, and formed out of all; a direction which constitutes the true line of the liberty and happiness of the community.

'The power and jurisdiction of parliament,' says Sir Edward Coke, 'is so transcendant and absolute, that it cannot be confined either for causes or persons within any bounds. And of this high court he adds, it may be truly said, *Si antiquitatem spectes, est vetustissima; si dignitatem, est honoratissima; si jurisdictionem, est capacissima.* It has sovereign and uncontrollable authority in making, confirming, enlarging, restraining, abrogating, repealing, reviving, and expounding all laws, concerning matters of all possible denominations, ecclesiastical or temporal, civil, military, maritime, or criminal; this being the place where that absolute despotic power, which must in all governments reside somewhere, is entrusted by the constitution of these kingdoms. All mischiefs and grievances, operations and remedies, that transcend the ordinary course of the laws, are within the reach of this extraordinary tribunal. It can regulate or new-model the succession to the crown, as was done in the reigns of Henry VIII. and William III. It can alter the established religion of the land; as was done in a variety of instances in the reigns of king Henry VIII. and his three children. It can change and create afresh even the constitution of the kingdom and of parliaments themselves; as was done by the act of union, and the several statutes for triennial and septennial elections. It can, in short, do every thing that is not naturally impossible; and therefore some have not scrupled to call its power, by a figure rather too bold, the omnipotence of parliament. True it is, that what the parliament doth, no authority upon earth can undo. So that it is a matter most essential to the liberties of this kingdom, that such members be delegated to this important trust as are most eminent for their probity, their fortitude, and knowledge; for it was a known apophthegm of the great lord treasurer Burleigh, 'that England could never be ruined but by a parliament:' and, as Sir Matthew Hale observes, This being the highest and greatest court, over which none other can have jurisdiction in the kingdom, if by any means a misgovernment should anywise fall upon it, the subjects of this kingdom are left without all manner of remedy. Mr. Locke, and other theoretical writers, have held that 'there remains still inherent in the people a supreme power to remove or alter the legislature, when they find the legislature act contrary to the trust reposed in them; for, when such trust is abused, it is thereby forfeited, and devolves to those who gave it.' But, however just this conclusion may be in theory, we

cannot adopt it, nor argue from it, under any dispensation of government at present actually existing. For this devolution of power to the people at large includes in it a dissolution of the whole form of government established by that people; reduces all the members to their original state of equality, and, by annihilating the sovereign power, repeals all positive laws whatsoever before enacted. No human laws will, therefore, suppose a case, which at once must destroy all law, and compel men to build afresh upon a new foundation; nor will they make provision for so desperate an event as must render all legal provisions ineffectual. So long, therefore, as the English constitution lasts, we may venture to affirm, that the power of parliament is absolute, and without control. To prevent the mischiefs that might arise by placing this extensive authority in hands either incapable or improper to manage it, it is provided by the custom and law of parliament that no one shall sit or vote in either house unless he be twenty-one years of age. This is also expressly declared by stats. 7 and 8 W. III. c. 25: yet, with regard to the house of commons, doubts have arisen from some contradictory adjudications, whether or not a minor was incapacitated from sitting in that house. It is also enacted by stat. 7 Jac. I. c. 6, that no member be permitted to enter the house of commons till he has taken the oath of allegiance before the lord steward or his deputy: and by 30 Car. II. stat. 2, and 1 Geo. c. 13, that no member shall vote or sit in either house, till he has, in the presence of the house, taken the oaths of allegiance, supremacy, and abjuration, and subscribed and repeated the declaration against transubstantiation, and invocation of saints, and the sacrifice of the mass. Aliens, unless naturalised, were likewise by the law of parliament incapable to serve therein: and now it is enacted by stat. 12 and 13 W. III. c. 2 that no alien, even though he be naturalised, shall be capable of being a member of either house of parliament. And there are not only these standing incapacities, but if any person is made a peer by the king, or elected to serve in the house of commons by the people, yet may the respective houses, upon complaint of any crime in such person, and proof thereof, adjudge him disabled and incapable to sit as a member: and this by the law and custom of parliament. For as every court of justice has laws and customs for its direction, some the civil and canon, some the common law, others their own peculiar laws and customs; so the high court of parliament has also its own peculiar law called the *lex et consuetudo parliamenti*; a law which Sir Edward Coke observes is *ab omnibus querenda, a multis ignorata, a paucis cognita*. It will not therefore be expected that we should enter into the examination of this law with minuteness; since, as the same learned author assures us, it is much better to be learned out of the rolls of parliament and other records, and by precedents and continual experience, than can be expressed by any one man. The whole of the law and custom of parliament has its original from this one maxim, 'that whatever matter arises concerning either house of parliament, ought to be

examined, discussed, and adjudged in that house to which it relates, and not elsewhere.' Hence, for instance, the lords will not suffer the commons to interfere in settling the election of a peer of Scotland; the commons will not allow the lords to judge of the election of a burgess; nor will either house permit the subordinate courts of law to examine the merits of either case. But the maxims upon which they proceed, together with the method of proceeding, rest entirely in the breast of the parliament itself; and are not defined and ascertained by any particular stated laws. The privileges of parliament are likewise very large and indefinite; and therefore, when, in 31 Henry VI., the house of lords propounded a question to the judges concerning them, the chief justice, Sir John Fortescue, in the name of his brethren, declared 'that they ought not to make answer to that question; for it hath not been used aforetime, that the justices should in any wise determine the privileges of the high court of parliament; for it is so high and mighty in its nature that it may make law; and that which is law, it may make no law: and the determination and knowledge of that privilege belongs to the lords of parliament, and not to the justices.' Privilege of parliament was principally established, in order to protect its members not only from being molested by their fellow-subjects, but also more especially from being oppressed by the power of the crown. If, therefore, all the privileges of parliament were once to be set down and ascertained, and no privilege to be allowed but what was so defined and determined, it were easy for the executive power to devise some new case, not within the line of privilege, and under pretence thereof to harass any refractory member, and violate the freedom of parliament. The dignity and independence of the two houses are therefore in a great measure preserved by keeping their privileges indefinite. Some, however, of the more notorious privileges of the members of either house are, privilege of speech, of person, of their domestics, and of their lands and goods. As to the first, privilege of speech, it is declared by the statute 1 W. & M. stat. 2, c. 2, as one of the liberties of the people: 'That the freedom of speech, and debates, and proceedings in parliament, ought not to be impeached or questioned in any court or place out of parliament.' And this freedom of speech is particularly demanded of the king in person, by the speaker of the house of commons, at the opening of every new parliament. So likewise are the other privileges of person, servants, lands, and goods; which are immunities as ancient as Edward the Confessor, in whose laws we find this precept, *ad synodos venientibus, sive summoniti sint, sive per se quid agendum habuerint, sit summa pax*; and so, too, in the old Gothic constitutions, *extenditur hæc pax et securitas ad quatuordecim dies, convocato regni senatu*. This included formerly not only privilege from illegal violence, but also from legal arrests and seizures by process from the courts of law. And still to assault by violence a member of either house, or his menial servants, is a high contempt of parliament, and there punished with the utmost

severity. It has likewise peculiar penalties annexed to it in the courts of law by stat. 5 Hen. IV. c. 6, and 11 Hen. VI. c. 11. Neither can any member of either house be arrested and taken into custody without a breach of the privilege of parliament. But all other privileges which derogate from the common law are now at an end, save only as to the freedom of the member's person; which in a peer (by the privilege of peerage) is for ever sacred and inviolable; and in a commoner (by the privilege of parliament) for forty days after every prorogation, and forty days before the next appointed meeting; which is now in effect as long as the parliament subsists: it seldom being prorogued for more than eighty days at a time. As to all other privileges, which obstruct the ordinary course of justice, they were restrained by the statutes 12 W. III. c. 3; 2 and 3 Ann. c. 18; and 11 Geo. II. c. 24; and are now totally abolished by statute 10 Geo. III. c. 50; which enacts that any suit may at any time be brought against any peer or member of parliament, their servants, or any other person entitled to privilege of parliament; which shall not be impeached or delayed by pretence of any such privilege, except that the person of a member of the house of commons shall not thereby be subjected to any arrest or imprisonment. Likewise, for the benefit of commerce, it is provided, by statute 4 Geo. III. c. 43, that any trader, having privilege of parliament, may be served with legal process for any just debt (to the amount of £100): and, unless he makes satisfaction within two months, it shall be deemed an act of bankruptcy; and that commission of bankruptcy may be issued against such privileged traders in like manner as against any other. The only way by which courts of justice could anciently take cognisance of privilege of parliament was by writ of privilege, in the nature of supersedeas, to deliver the party out of custody when arrested in a civil suit. For when a letter was written by the speaker to the judges, to stay proceedings against a privileged person, they rejected it as contrary to their oath of office. But since the statute 12 W. III. c. 3, which enacts that no privileged person shall be subject to arrest or imprisonment, it has been held that such arrest is irregular *ab initio*, and that the party may be discharged upon motion. It is to be observed that there is no precedent of any such writ of privilege, but only in civil suits; and that the statute of 1 Jac. I. c. 13, and that of king William, which remedy some inconveniences arising from privilege of parliament, speak only of civil actions. And, therefore, the claim of privilege has been usually guarded with an exception as to the case of indictable crimes; or, as it has been frequently expressed, of treason, felony, and breach of the peace. Whereby it seems to have been understood that no privilege was allowable to the members, their families, or servants, in any crime whatsoever; for all crimes are treated by the law as being *contra pacem domini regis*. And instances have not been wanting, wherein privileged persons have been convicted of misdemeanors, and committed, or prosecuted to outlawry, even in the middle of a session; which proceeding has after-

wards received the sanction and approbation of parliament. To which may be added, that, about thirty years ago, the case of writing and publishing seditious libels was resolved by both houses not to be entitled to privilege; and that the reasons upon which that case proceeded extended equally to every indictable offence. So that the chief, if not the only privilege of parliament, in such cases, seems to be the right of receiving immediate information of the imprisonment or detention of any member, with the reason for which he is detained; a practice that is daily used upon the slightest military accusations, preparatory to a trial by a court-martial, and which is recognised by the several temporary statutes for suspending the habeas corpus act: whereby it is provided that no member of either house shall be detained, till the matter of which he stands suspected be first communicated to the house of which he is a member, and the consent of the said house obtained for his commitment or detaining. But yet the usage has uniformly been, ever since the Revolution, that the communication has been subsequent to the arrest. See KING, LORDS, and COMMONS.

IV. The method of *proceeding*, in enacting laws, is much the same in both houses. But for this we refer the reader to the article BILL, and shall only observe in this place that, for despatch of business, each house of parliament has its speaker. The speaker of the house of lords, whose office it is to preside there, and manage the formality of business, is the lord chancellor, or keeper of the king's great seal, or any other appointed by the king's commission; and, if none be so appointed, the house of lords, it is said, may elect. The speaker of the house of commons is chosen by the house; but must be approved by the king. And herein the usage of the two houses differs, that the speaker of the house of commons cannot give his opinion or argue any question in the house; but the speaker of the house of lords, if a lord of parliament, may. In each house the act of the majority binds the whole; and this majority is declared by votes openly and publicly given; not, as formerly, at Venice, and many other senatorial assemblies, privately, or by ballot. This latter method may be serviceable to prevent intrigues and unconstitutional combinations; but is impossible to be practised with us, at least in the house of commons, where every member's conduct is subject to the future censure of his constituents, and therefore should be openly submitted to their inspection.

V. i. An *adjournment* is no more than a continuance of the session from one day to another, as the word signifies; and this is done by the authority of each house separately every day; and sometimes for a fortnight or a month together, as at Christmas or Easter, or upon other particular occasions. But the adjournment of one house is no adjournment of the other. It has also been usual, when his majesty has signified his pleasure, that both or either of the houses should adjourn themselves to a certain day, to obey the king's pleasure so signified, and to adjourn accordingly. Otherwise, besides the indecorum of a refusal, a prorogation would as-

surely follow; which would often be very inconvenient to both public and private business. For prorogation puts an end to the session; and then such bills as are only begun, and not perfected, must be resumed de novo, if at all, in a subsequent session; whereas, after an adjournment, all things continue in the same state as at the time of adjournment made, and may be proceeded on without any fresh commencement. ii. A *prorogation* is the continuance of the parliament from one session to another; as an adjournment is a continuance of the session from day to day. This is done by the royal authority, expressed either by the lord chancellor in his majesty's presence, or by commission from the crown, or frequently by proclamation. Both houses are necessarily prorogued at the same time; it not being a prorogation of the house of lords or commons, but of the parliament. The session is never understood to be at an end until a prorogation; though, unless some act be passed, or some judgment given in parliament, it is in truth no session at all. And formerly the usage was for the king to give the royal assent to all such bills as he approved at the end of every session, and then to prorogue the parliament, though sometimes only for a day or two; after which all business then depending in the houses was not to be begun again. Which custom obtained so strongly, that it once became a question, Whether giving the royal assent to a single bill did not of course put an end to the session? And, though it was then resolved in the negative, yet the notion was so deeply rooted that the statute 1 Car. I. c. 7 was passed to declare, that the king's assent to that and some other acts should not put an end to the session; and even so late as the reign of Charles II. we find a proviso frequently tacked to a bill, that his majesty's assent thereto should not determine the session of parliament. But it now seems to be allowed that a prorogation must be expressly made, in order to determine the session. And if at the time of an actual rebellion, or imminent danger of invasion, the parliament should be separated by adjournment or prorogation, the king is empowered to call them together by proclamation, with fourteen days' notice of the time appointed for their re-assembling. iii. A *dissolution* is the civil death of the parliament; and this may be effected three ways: 1. By the king's will, expressed either in person or by representation. For, as the king has the sole right of convening the parliament, so also it is a branch of the royal prerogative, that he may (whenever he pleases) prorogue the parliament for a time, or put a final period to its existence. If nothing had a right to prorogue or dissolve a parliament but itself, it might become perpetual. And this would be extremely dangerous, if at any time it should attempt to encroach upon the executive power; as was fatally experienced by the unfortunate king Charles I.; who, having unadvisedly passed an act to continue the parliament then in being till such time as it should please to dissolve itself, at last fell a sacrifice to that inordinate power which he himself had consented to give them. It is therefore extremely necessary that the crown should be empowered to regulate the

duration of these assemblies, under the limitations which the English constitution has prescribed; so that, on the one hand, they may frequently and regularly come together for the despatch of business and redress of grievances, and may not, on the other, even with the consent of the crown, be continued to an inconvenient or unconstitutional length. 2. A parliament may be dissolved by the demise of the crown. This dissolution formerly happened immediately upon the death of the reigning sovereign: for he being considered in law as the head of the parliament (*caput, principium, et finis*), that failing, the whole body was held to be extinct. But the calling a new parliament immediately on the inauguration of the successor being found inconvenient, and dangers being apprehended from having no parliament in being in case of a disputed succession, it was enacted by the statutes 7 and 8 Will. III. c. 15, and 6 Ann. c. 7, that the parliament in being shall continue for six months after the death of any king or queen, unless sooner prorogued or dissolved by the successor; that if the parliament be at the time of the king's death, separated by adjournment or prorogation, it shall notwithstanding assemble immediately: and that, if no parliament is then in being, the members of the last parliament shall assemble, and be again a parliament. 3. Lastly, a parliament may be dissolved or expire by length of time. For if either the legislative body were perpetual, or might last for the life of the prince who convened them, as formerly, and were so to be supplied, by occasionally filling the vacancies with new representatives; in these cases, if it were once corrupted, the evil would be past all remedy; but, when different bodies succeed each other, if the people see cause to disapprove of the present, they may rectify its faults in the next. A legislative assembly also, which is sure to be separated again (whereby its members will themselves become private men, and subject to the full extent of the laws which they have enacted for others), will think themselves bound, in interest as well as duty, to make only such laws as are good. The utmost extent of time that the same parliament was allowed to sit, by the statute 6 W. & M. c. 3, was three years; after the expiration of which, reckoning from the return of the first summons, the parliament was to have no longer continuance. But by statute 1 Geo. I. st. 2, c. 38 (in order, professedly, to prevent the great and continued expences of frequent elections, and the violent heats and animosities consequent thereupon, and for the peace and security of the government then just recovering from the late rebellion), this term was prolonged to seven years; and, what alone is an instance of the vast authority of parliament, the very same house that was chosen for three years enacted its own continuance for seven. So that, as our constitution now stands, the parliament must expire, or die a natural death, at the end of every seventh year, if not sooner dissolved by the royal prerogative.

In the house of *lords*, the princes of the blood sit by themselves on the sides of the throne; at the wall, on the king's right hand, the two arch-

bishops sit by themselves on a form. Below them the bishops of London, Durham, and Winchester, and all the other bishops, sit according to the priority of their consecration. On the king's left hand the lord treasurer, lord president, and lord privy-seal, sit upon forms above all dukes, except the royal blood; then the dukes, marquesses, and earls, according to their creation. Across the room are wool-sacks, continued from an ancient custom; and the chancellor, or keeper, being of course the speaker of the house of lords, sits on the first wool-sack before the throne, with the great seal or mace lying by him; below these are forms for the viscounts and barons. On the other wool-sacks are seated the judges, masters in chancery, and king's council, who are only to give their advice in points of law: but they all stand up till the king gives them leave to sit. 2. The commons sit promiscuously; only the speaker has a chair at the upper end of the house, and the clerk and his assistant sit at the table near him. When a member of the house of commons speaks, he stands up uncovered, and directs his speech to the speaker only. If what he says be answered by another, he is not allowed to reply the same day, unless personal reflections have been cast upon him: but when the commons, in order to have a greater freedom of debate, have resolved themselves into a committee of the whole house, every member may speak to a question as often as he thinks necessary. In the house of lords they vote, beginning at the *puisne*, or lowest baron, and so up orderly to the highest, every one answering, *Content* or *Not content*. In the house of commons they vote by yeas and nays; and, if it be dubious which are the greater number, the house divides. If the question be about bringing any thing into the house, the yeas go out; but, if it be about any thing the house already has, the nays go out. In all divisions the speaker appoints four tellers, two of each opinion. In a committee of the whole house, they divide by changing sides, the yeas taking the right and the nays the left of the chair; and then there are but two tellers. If a bill pass one house, and the other demur to it, a conference is demanded in the painted chamber, where certain members are deputed from each house; and here the lords sit covered, and the commons stand bare, and debate the case. If they disagree, the affair is null; and if they agree, this, with the other bills that have passed both houses, is brought down to the king in the house of lords, who comes thither clothed in his royal robes; before him the clerk of the parliament reads the title of each bill, and, as he reads, the clerk of the crown pronounces the royal assent or dissent. If it be a public bill, the royal assent is given in these words, *Le roy le veut*, The king will have it so; if private, *Soit fait comme il est désiré*, Let the request be complied with; if the king refuses the bill, the answer is, *Le roy s'avisera*, The king will think of it; and, if it be a money bill, the answer is, *Le roy remercie ses loyaux sujets, accepte leur benevolence, et aussi le veut*; The king thanks his loyal subjects, accepts their benevolence, and therefore grants his consent.

The *High Court* of Parliament is the supreme

court in the kingdom, not only for the making, but also for the execution, of laws, by the trial of great and enormous offenders, whether lords or commoners, in the method of parliamentary impeachment. As for acts of parliament to attain particular persons of treason or felony, or to inflict pains and penalties, beyond or contrary to the common law, to serve a special purpose, we speak not of them; being to all intents and purposes new laws, made *pro re nata*, and by no means an execution of such as are already in being. But an impeachment before the lords by the commons of Great Britain, in parliament, is a prosecution of the already known and established law, and has been frequently put in practice; being a presentment to the most high and supreme court of criminal jurisdiction by the most solemn grand inquest of the whole kingdom. A commoner cannot, however, be impeached before the lords for any capital offence, but only for any high misdemeanors; a peer may be impeached for any crime. And they usually (in case of any impeachment of a peer for treason), address the crown to appoint a lord high steward, for the greater dignity and regularity of their proceedings; which high steward was formerly elected by the peers themselves, though he was generally commissioned by the king; but it has of late years been strenuously maintained that the appointment of a high steward in such cases is not indispensably necessary, but that the house may proceed without one. The articles of impeachment are a kind of bills of indictment, found by the house of commons, and afterwards tried by the lords; who are in cases of misdemeanors considered not only as their own peers, but as the peers of the whole nation. This is a custom derived to us from the constitution of the ancient Germans; who in their great councils sometimes tried capital accusations relating to the public: *Licet apud concilium accusare quoque, et discrimen opus intendere*. And it has a peculiar propriety in the English constitution; which has much improved upon the ancient model imported hither from the Continent. For, though in general the union of the legislative and judicial powers ought to be most carefully avoided, yet it may happen that a subject, entrusted with the administration of public affairs, may infringe the rights of the people, and be guilty of such crimes as the ordinary magistrate either dares not or cannot punish. Of these the representatives of the people, or house of commons, cannot properly judge; because their constituents are the parties injured, and can therefore only impeach. But before what court shall this impeachment be tried? Not before the ordinary tribunals, which would naturally be swayed by the authority of so powerful an accuser. Reason therefore will suggest that this branch of the legislature, which represents the people, must bring its charge before the other branch, which consists of the nobility, who have neither the same interests, nor the same passions, as popular assemblies. This is a vast superiority which the constitution of this island enjoys over those of the Grecian or Roman republics; where the people were at the same time both judges and

accusers. It is proper that the nobility should judge, to insure justice to the accused; as it is proper that the people should accuse, to insure justice to the commonwealth. And therefore, among other extraordinary circumstances attending the authority of this court, there is one of a very singular nature, which was insisted on by the house of commons, in the case of the earl of Danby in the reign of Charles II., and is now enacted by statute 12 and 13 Wil. III., c. 2, that no pardon under the great seal shall be pleadable to an impeachment by the commons of Great Britain in parliament.

PARLOUR, *n. s.* *Fr. parloir; Ital. parlatorio*. A room in monasteries where the religious meet to converse; a room in houses on the first floor furnished for the reception of company; one which, according to modern usage, belongs only to the middle classes of society, or to the old English farm-house.

Back again fair Alma led them right
And soon into a goodly parlour brought.

Spenser.

Can we judge it a thing seemly for a man to go about the building of an house to the God of heaven, with no other appearance than if his end were to rear up a kitchen or a parlour for his own use?

Hooker.

Roof and sides were like a parlour made
A soft recess, and a cool summer shade.

Dryden.

It would be infinitely more shameful, in the dress of the kitchen, to receive the entertainments of the parlour.

South.

The first, forgive my verse if too diffuse,
Performed the kitchen's and the parlour's use;
The second, better bolted and immured,
From wolves his out-door family secured.

Harte.

I always admitted them into the parlour after supper, when, the carpet affording their feet a firm hold, they would frisk, and bound, and play a thousand gambols.

Couper.

PAR'LOUS, *adj.* ? Perhaps from French **PAR'LOUSNESS**, *n. s.* *Fr. parler*, to speak; but Junius derives it from *perilous*, in which it answers to the Latin *improbis*. Quick of temper; sprightly; keen.

Midas durst communicate

To none but to his wife his ears of state;
One must be trusted, and he thought her fit,
As passing prudent, and a parlous wit.

Dryden.

PARMA, a duchy of the north of Italy, bounded on the north by Lombardy, on the east by Modena, and on the south and west by Tuscany. It extends from 9° 28' to 10° 46' of E. long. and from 44° 14' to 44° 59' of N. lat., and is divided into the districts of Parma, Piacenza, Borgo San Domino, and Guastalla. Its surface is partly mountainous and stony; but in the north are extensive and fertile plains: the south is traversed by several branches of the Apennines. The principal rivers are the Po, which separates it from Lombardy; the Taro, the Trebia, the Lenza, and a number of smaller streams, all having a common origin in the Apennines, and discharging themselves into the Po. The products are vines, wheat, maize; vegetables and various fruits: hemp and saffron. The pastures are fine and the cattle numerous. The famous Par-

mesan cheese, originally a product of this country, is now made chiefly in the district of Lodi. Bees and silk-worms are objects of considerable attention, and silk articles constitute the chief manufacture. Iron, copper, and vitriol, are obtained in the mountains. Population 380,000. The government is absolute, the legislative and executive powers being wholly in the hands of the reigning prince.

The religion is Catholic; the army about 2400; and the revenue of the state nearly £160,000 annually; but it is encumbered with a public debt. The inhabitants are considered as frugal and industrious, and less addicted to sensual pleasures than in some of the other states. The other chief city of this duchy is **PLACENTIA**, which see.

PARMA, the capital of these dominions, is delightfully situated on a fertile plain, and watered by a small river of the same name. Though not so well built as many of the other large towns of Italy, it has a handsome square near the centre, surrounded with arcades. Its fortifications are of little importance, but its pentagonal citadel is esteemed one of the strongest in Italy. The dome of the cathedral is noted for its paintings by Correggio; and the cupola of St. John's was painted by this artist. The other public buildings present nothing remarkable. Its university is not numerously attended. It is the see of an archbishop and the seat of ducal administration. Its manufactures are principally silk and hats. Population about 30,000.

Parma, founded by the ancient Etrurians, has ever since retained its name. After the Etrurians it came into possession of the Boii, a tribe of Gauls, and subsequently into that of the Romans. On the decline of the empire it assumed a republican form, and asserted its liberty with great firmness; but, falling a prey to faction, fell ultimately into the hands of the pope, and Paul III. gave it to his son Luigi Farnese, whose descendants continued to reign as dukes of Parma, till the extinction of the male branch. Elizabeth Farnese, in 1714, married Philip V. of Spain, and brought him the duchy as a dowry. After this her son Don Carlos, being made king of the Two Sicilies, the duchy of Parma and Piacenza was ceded to the emperor, and governed by the house of Austria till 1748, when they were ceded to Don Philip, the second son of Philip V. and Elizabeth Farnese. By the peace of Luneville (1801) the duke of Parma was raised to the throne of Tuscany, with the title of king of Etruria, and in 1805 Parma and Piacenza were united to France. On the fall of Buonaparte they were taken possession of by the Austrians, and given by the treaty of Paris in 1814 to the ex-empress Maria Louisa, devolving on her death to Austria and Sardinia; a provision modified by subsequent arrangements, the latest of which, in 1818, stipulated, that, in return for certain equivalents, this territory should finally devolve to Spain. Parma is thirty miles west of Modena, and seventy south-east of Milan.

PARMENIDES, an ancient Greek philosopher, born in Elis, about A. A. C. 505. He studied under Xenophanes, or Anaximander. He taught that there were only two elements,

fire and earth; and that the first generation of men was produced from the sun. Along with these and other absurdities, he taught some philosophical truths. He first discovered that the earth is round, but he placed it, like Ptolemy, in the centre of the solar system. He wrote his system in verse; and fragments of it were collected by Henry Stephanus, and published under the title of *De Poesi Philosophica*.

PARMENIO, a celebrated and popular general, in the army of Alexander the Great, who long enjoyed that prince's confidence, and was much attached to him. Yet in a moment of suspicion, excited by false information, Alexander ordered this faithful friend to be put to death, in his seventieth year, with his son. Plutarch remarks that Parmenio gained many victories without Alexander, but Alexander not one without Parmenio.

PARMENTIER (John), a celebrated French navigator, born at Dieppe, in 1494. He was the first pilot who conducted vessels to Brasil, and the first Frenchman who sailed as far as Sumatra. He was a good astronomer, and laid down several excellent maps. He died at Sumatra in 1530.

PARMESAN CHEESE, a sort of cheese much esteemed among the Italians; so named from the duchy of Parma where it is made, and whence it is conveyed to various parts of Europe. Of this cheese there are three sorts; the *fromaggio di forma*, about two palms in diameter, and seven or eight inches thick; and the *fromaggio di ribiole* and *di ribolini*, which are not so large. It is of a saffron color; and the best is kept three or four years.

PARMIGIANO, a celebrated painter, whose true name was Francis Mazzuoli; but named Parmigiano from Parma, where he was born in 1504. He was educated under his two uncles, and was an eminent painter when but sixteen years of age. He was celebrated all over Italy at nineteen; and at the age of twenty-three, when the general of Charles V. took Rome by storm, some of the soldiers, having, in sacking the town, broken into his apartments, found him intent upon his work, and were so struck with the beauty of his pieces that, instead of involving him in the plunder and destruction in which they were then engaged, they protected him from all manner of violence. His works are distinguished by the beauty of the coloring, invention, and drawing. His figures are spirited and graceful, particularly with respect to attitude and dresses. His paintings in oil are few, but held in high esteem, as are also his drawings and etchings. At Rome he was employed by pope Clement VII., who was highly pleased with his performances and rewarded him liberally. Parmigiano painted a circumcision, which he presented to the pope, who prized it as one of the most capital works in his palace. That picture was not only excellent for the composition, coloring, and execution, but remarkable for the introduction of three different lights, without destroying the harmony of the whole. The light diffused on the principal figure was from the irradiation of the Infant Jesus; the second was illuminated by a torch carried by

one who attended the sacrifice; the others were in the open air, enlightened by the early dawn, which showed a lovely landscape, diversified with a number of cottages and villas. In the Houghton collection of pictures, now in possession of the emperor of Russia, is one of his finest pictures, representing Christ laid in the sepulchre, for which he is said to have been knighted by the duke of Parma. The best of his performances was Moses breaking the Tables of the Law, at Parma, of which Sir Joshua Reynolds says, we are at a loss which to admire most, the correctness of drawing, or the grandeur of the conception. Parmigiano had a fine taste for music, and, if he did not invent etching, he was at least the first who practised that art in Italy. He also engraved some of his designs; but it is to be regretted that, with such talents, he should have wasted his time and property in the study of alchemy, with a view to the discovery of the philosopher's stone. He died of a fever in 1540.

PARNASSIA, grass of Parnassus. in botany, a genus of the tetragynia order, and pentandria class of plants: *CAL.* quinquepartite; petals five; nectaria five, heart-shaped, and ciliated with globular tops: *CAPS.* quadrivalved: species one, having a stalk about a foot high, angular, and often a little twisted, bearing a single white flower at top. The flowers are very beautifully streaked with yellow; so that though it is a common plant, growing naturally in moist pastures, it is frequently admitted into gardens.

PARNASSUS, in ancient geography, a mountain of Phocis, near Delphi, and the mounts Cithæron and Helicon, with two tops; the one called Cirrha, sacred to Apollo; and the other Nisa, sacred to Bacchus. It was covered with bay-trees, and originally called Larnassus, from Deucalion's larnax or ark, thither conveyed by the flood; after the flood Parnassus from Har Nahas, changing the *h* into *p*, the hill of divination or augury; the oracle of Delphi standing at its foot. Dr. Chandler, who visited it, thus describes it in his Travels in Greece:—'Parnassus was the western boundary of Phocis, and, stretching north from about Delphi toward the Etæan Mountains, separated the western Locri from those who possessed the sea-coast before Eubœa. It was a place of refuge to the Delphians in times of danger. In the deluge, which happened under Deucalion, the natives were saved on it. On the invasion of Xerxes, some transported their families to Achaia, but many concealed them in this mountain, and in Corycium, a grotto of the nymphs. All Parnassus was renowned for sanctity; but Corycium was the most noted among the hallowed caves and places.' 'On the way to the summits of Parnassus,' says Pausanias, 'sixty stadia beyond Delphi, is a brazen image; and thence the ascent to Corycium is easier for a man on foot than for mules and horses. Of all the caves in which I have been, this appeared to me the best worth seeing. On the coasts and by the sea-side are more than can be numbered; but some are very famous both in Greece and in other countries. The Corycian cave exceeds in magnitude those I have mentioned, and for the

most part may be passed without a light. The inhabitants of Parnassus esteem it sacred to the Corycian nymphs and to Pan. From the cave to reach the summit of the mountain is difficult even to a man on foot. The summits are above the clouds, and the women called Thyades madden on them in the rites of Bacchus and Apollo.' Their frantic orgies were performed yearly.

PAR'NEL, *n. s.* The diminutive of *patronella*.—Skinner. A punk; a slut. Obsolete.

PARNELL (Dr. Thomas), a celebrated divine and poet, born in Dublin in 1679. He was educated at Trinity College, and in 1700 took his degree of M. A. In 1706 he came to England, and was much respected by Gay, Swift, Arbuthnot, &c. He was archdeacon of Clogher, and the intimate friend of Pope; who published his Hermit and other works, with commendatory verses prefixed. He died in 1718, aged thirty-nine.

PARO'CHIAL, *adj.* Lat. *parochialis*, from *parochia*. Belonging to a parish.

The married state of *parochial* pastors hath given them the opportunity of setting a more exact and universal pattern of holy living to the people committed to their charge. *Atterbury.*

PAR'ODY, *n. s. & v. a.* Fr. *parodie*; Gr. *παρῳδία*. A mode of writing in which the words or thoughts of an author are taken, and by a slight change adapted to a new purpose: to parody is, to copy or change in this way.

The imitations of the ancients are added together with some of the *parodies* and allusions to the most excellent of the moderns. *Pope's Dunciad.*

I have translated, or rather *parodied*, a poem of Horace, in which I introduce you advising me. *Pope.*

Parody is an ancient flower both of ancient and modern literature. It is a species of ludicrous composition, which derives its wit from association: and never fails to produce admiration and delight, when it unites taste in selection with felicity of application. *Paroical.*

PARODY, in poetry, consists in applying the verses written on one subject, by way of ridicule to another; or in turning a serious work into a burlesque, by affecting to observe as near as possible the same rhymes, words, and cadences. The parody was first attempted by the Greeks, from whom we borrow the name. It is the same with what some writers call travesty. Thus Cato exposed the inconstant disposition of Marcus Fulvius Nobilior, by changing Nobilior into Mobilior. Another kind of parody consists in the mere application of some known verse, or part of a verse, of a writer, without making any change in it, with a view to expose it.

PARONYMOUS, *adj.* Gr. *παρωνυμῶς*; *παρὰ* near, and *ὄνομα* a name. Resembling another word.

Show your critical learning in the etymology of terms, the synonymous and the *paronymous* or kindred names. *Watts.*

PAROLE, *n. s. & adj.* Fr. *parole*, from *parler*; Ital. *parola*. Word given as an assurance; verbal promise, particularly by a prisoner not to go away: the adjective is used in law for verbal; by word of mouth.

Love's votaries enthrall each other's soul, Till both of them live but upon *parole*. *Clarendon*

Be very tender of your honour, and not fall in love; because I have a scruple whether you can keep your *parole*, if you become a prisoner to the ladies.

Swift.

PAROLE, in a military sense, the promise made by a prisoner of war, when he has leave to go any where, of returning at a time appointed, or not to take up arms, if not exchanged. Hence to put an officer on parole is to take his word, whether a prisoner of war or under arrest, that he will not exceed certain limits, and be always forthcoming when called for.

PAROLE means also a word given out every day in orders by the commanding officer, both in camp and garrison, in order to know friends from enemies.

PARONOMASIA, *n. s.* Gr. *παρωνομασία*; Lat. *agnomimatio*: a rhetorical figure, in which, by the change of a letter or syllable, several things are alluded to.

PARONYCHIA, *n. s.* Fr. *paronychie*; Gr. *παρωνυχία*. A preternatural swelling or sore under the root of the finger nail; a whitlow.

PARONYCHIA, the whitlow, in surgery, is an abscess at the end of the fingers. According as it is situated more or less deep, it is differently denominated. It begins with a slow heavy pain, attended with a slight pulsation, without swelling, redness, or heat; but soon the pain, heat, and throbbing, are intolerable; the parts grow large and red, the adjoining fingers and the whole hand swell up; in some cases a kind of red and inflated streak may be observed, which, beginning at the affected part, is continued almost to the elbow; nor is it unusual for the patient to complain of a very sharp pain under the shoulder, and sometimes the whole arm is excessively inflamed and swelled; the patient cannot sleep, the fever, &c., increasing; and sometimes delirium or convulsions follow. When it is seated in the skin or fat, in the back or the fore part of the finger, or under or near the nail, the pain is severe, but ends well. When the periosteum is inflamed or corroded the pain is tormenting. When the nervous coats of the flexor tendons of the fingers or nerves near them are seized the worst symptoms attend. If the first kind suppurates, it must be opened, and treated as abscesses in general; but the best method of treating the other two species is, on the first, or at furthest the second day, to cut the part where the pain is seated, quite to the bone; if this operation is longer deferred, a suppuration will come on; in which case suppuration should be speedily promoted, and as early a discharge given to the matter as possible. As the pain is so considerable as to occasion a fever, and sometimes convulsions, the tinct. theb. may be added, the suppurating applications, and also given in a draught at bedtime. The second kind proves very troublesome, and sometimes ends in a caries of the subjacent bone. The third is very tedious in the cure, and usually the phalanx on which it is seated is destroyed.

PAROPAMISUS, in ancient geography, a ridge of mountains and an extensive territory in the north of India, which took Alexander the Great and his army sixteen days to cross it.

PAROQUET, *n. s.* Fr. *perroquet*. A small species of parrot.

The great, red, and blue, are parrots; the middlemost, called popinjays; and the lesser, *parquets*; in all above twenty sorts.

Grew.

I would not give my *parquet*

For all the doves that ever flew.

Prior.

PAROQUET. See **PSITTACUS**.

PAROS, in ancient geography, an island of the Ægean Sea, one of the Cyclades, thirty-eight miles from Delos, anciently called Pactye and Minoa; also Demetrius, Zacynthus, Hyria, Hyllessea, and Cabarnis. It was, the country of Archilochus, the Iambic poet, and famous for its white marble, called lychnites, because dug by the light of lamps. The name of Cabarnis is derived, according to Stephanus, from one Cabarnus, who informed Ceres of the rape of her daughter Proserpine; or, according to Hesychius, from the Cabarni, the priests of Ceres, so called by the Parians. The name of Minoa is borrowed from Minos, king of Crete, who subdued this, as he did most of the other islands of the Ægean Sea. It was called Paros, which name it retains to this day, from Paros the son of Parrhasius, or of Jason the Argonaut. Paros, according to Pliny, is seven miles and a half from Naxos, and twenty-eight from Delos. It was a rich and powerful island, being reckoned the most wealthy of the Cyclades. It is provided with several capacious and safe harbours, and was anciently much resorted to by traders. It was, according to Thucydides, originally peopled by the Phœnicians, who were the first masters of the sea. Afterwards the Carians settled here. Thucydides says, the Carians were driven out by the Cretans under Minos; but Diodorus writes, that the Carians did not settle here till after the Trojan war, when they found the Cretans in the island. Stephanus thinks that the Cretans, mixed with some Arcadians, were the only people that ever possessed this island. Minos himself, Pliny says, resided some time in this island, and received here the news of the death of his son Androgeus, who was killed in Attica after he had distinguished himself at the public games. The Parians assisted Darius in his expedition against Greece with a considerable squadron; but, after the victory obtained by Miltiades at Marathon, they were reduced to great straits by that general. However, after blocking up the city for twenty-six days, he was obliged to quit the enterprize, and return to Athens with disgrace. After the battle of Salamis, Themistocles subjected Paros and most of the neighbouring islands to Athens, exacting large sums from them for having favored the Persians. It appears from the famous monument of Adulas, which Cosmos of Egypt has described with great exactness, that Paros and the other Cyclades were once subject to the Ptolemies of Egypt. However, Paros fell again under the power of the Athenians, who continued masters of it till they were driven out by Mithridates the Great. But that prince being obliged to yield to Sylla, Lucullus, and Pompey, this and the other islands of the Archipelago submitted to the Romans, who reduced them to a province with Lydia, Phrygia, and Caria. During the

war in Candia, the Venetians destroyed the olive plantations, which were still a source of prosperity to the islanders; and finally the Russians, who declared themselves the liberators of Greece, laid waste whatever the barbarous Turks and Venetians had spared. There are not more than about 2000 inhabitants in the whole island, which number certainly would not have been sufficient at one time for the single city of Paros.

This city has now only the appearance of a village; its name has been changed into that of Parecchia; but the numerous fragments of ancient sculpture employed for common purposes, and various ancient inscriptions, remind one of what it once was. Clarke has published a great number of these inscriptions; but the most important piece of sculpture, in the opinion of all, that has been found in Paros, was brought to England at the commencement of the seventeenth century by the earl of Arundel, and is now preserved in the university of Oxford, under the name of the Arundel marble. It contains a chronological table very useful in illustrating the history of Greece. At the castle of Parecchia there are several antique fragments built into the walls, among others some pieces of columns laid horizontally.

On leaving Parecchia, and crossing some olive plantations, you come to Mount Capresso, where there is a quarry, once worked by the ancients for its beautiful white marble. These ancient quarries, abandoned since the fall of Greece, are partly stopped up; the galleries, which are still open, remain in the same state in which the ancient miners left them. You may discern by the engravings, which have been made on the rock near the entrance of the quarries, the famous bas relief, or rather sketch of bas relief, representing the festival of Silenus. It appears that by a singular *lusus naturæ* the head of this grotesque companion of Bacchus was found represented on the stone, and Onyses took occasion from this to surround it with a group of figures, and thus composed a beautiful picture. Paros has a magnificent port, called Naussa, capable of containing a whole fleet. The island produces pretty good wine.

PAROTID, *adj.* } Fr. *parotide*; Gr. *παρω-*
ΠΑ'ROTIS, *n. s.* } *τις*, of *πάρα* and *ωρα*, the ears. Salivary, so named because near the ears: parotis is a tumor in the glandules behind and about the ears.

Beasts and birds, having one common use of spittle, are furnished with the *parotid* glands, which help to supply the mouth with it. *Grew.*

PAROTID GLANDS, or the **PAROTIDS**. See **ANATOMY**.

PAROXYSM, *n. s.* Fr. *paroxysme*; Gr. *παροξυσμος*. A fit; periodical exacerbation of a disease.

Amorous girls, through the fury of an hysterick *paroxysm*, are cast into a trance for an hour.

Harvey.

I fancied to myself a kind of ease, in the change of the *paroxysm*. *Dryden.*

The greater distance of time there is between the *paroxysms*, the fever is less dangerous, but more obstinate. *Arbuthnot.*

PAROXYSM, *παροξυσμος* in medicine, is the

fit, attack, or exacerbation of a disease that occurs at intervals, or has decided remissions or intermissions. It is applicable to all febrile, spasmodic, convulsive, painful, or otherwise violent diseases, whether the periods of remission be regular or irregular. Thus we speak of a paroxysm of ague, of gout, of colic, of epilepsy, of insanity, &c.

PARR (Catherine), was the eldest daughter of Sir Thomas Parr of Kendall. She was first married to John Nevil, lord Latimer; after whose death she so captivated king Henry VIII. that he raised her to the throne. The royal nuptials were solemnised at Hampton Court on the 12th of July, 1534. Being religiously disposed, she was, in the early part of her life, a zealous observer of the Romish rites and ceremonies; but, in the dawning of the Reformation, she became as zealous a promoter of the Lutheran doctrine; yet with such prudence and circumspection as her perilous situation required. In such danger was she at one time, that the king had actually signed a warrant for committing her to the tower. She had, however, art enough to restore herself to his good graces. The king died in January 1547, just three years and a half after his marriage with his third Catharine; who, in a short time, was again espoused to Sir Thomas Seymour, lord-admiral of England: but in September, 1548, she died in childbed. The historians of this period generally insinuate that she was poisoned by her husband, to make way for his marriage with the lady Elizabeth. She wrote, 1. *Queen Catharine Parr's Lamentation of a Sinner*, bewailing the ignorance of her blind life; London, 8vo. 1548, 1563; 2. *Prayers or Meditations*, wherein the mynd is stirred patiently to suffice all afflictions here, to set at nought the vain prosperities of this world, and always to long for the everlastynge felicitye. Collected out of holy workes, by the most virtuous and gracious princesse, Katharine queene of Englande, France, and Irelande. Printed by J. Wayland, 1543, 4to.,—1561, 12mo.; 3. *Other Meditations, Prayers, Letters*, &c., unpublished.

PARR (Thomas), or Old Parr, a remarkable Englishman, who lived in the reigns of ten kings and queens. He was the son of John Parr, a husbandman of Winnington, in the parish of Alderbury, Salop. Following the profession of his father, he labored hard, and lived on coarse fare. Being taken up to London by the earl of Arundel, the journey proved fatal to him. Owing to the alteration in his diet, to the change of the air, and his general mode of life, he lived but a very short time; though one Robert Samber says, in his work entitled *Long Livers*, that Parr lived sixteen years after his presentation to Charles II. He was buried in Westminster Abbey. Though he had not the use of his eyes, nor much of his memory several years before he died, yet he had his hearing and apprehension very well; and was able, even to the 130th year of his age, to do any husbandman's work, even threshing of corn. The following summary of his life is from Oldys's MS. notes on Fuller's Worthies: 'Old Parr was born 1483; lived at home until 1500, æt. seventeen, when he went

out to service. 1518, æt. thirty-five, returned home from his master. 1522, æt. thirty-nine, spent four years on the remainder of his father's lease. 1543, æt. sixty, ended the first lease he renewed of Mr. Lewis Porter. 1563, æt. eighty, married Jane, daughter of John Taylor, a maiden; by whom he had a son and a daughter, who both died very young. 1564, æt. eighty-one, ended the second lease which he renewed of Mr. John Porter. 1585, æt. 102, ended the third lease he had renewed of Mr. Hugh Porter. 1588, æt. 105, did penance in Alderbury church for lying with Katharine Milton, and getting her with child. 1595, æt. 112, he buried his wife Jane, after they had lived thirty-two years together. 1605, æt. 122, having lived ten years a widower, he married Jane, widow of Anthony Adda, daughter of John Loyd of Gilsells, in Montgomeryshire, who survived him. 1635, æt. 152 and nine months, he died; after they had lived together thirty years, and after fifty years possession of his last lease.

PARR (Samuel), LL. D., a late learned critic, was the son of an apothecary of Harrow in Middlesex, where he was born January 15th, 1747. Admitted into the school of his native place, at the age of six, he was at its head in his fourteenth year, and was soon after called upon, much against his inclination, to assist his father in his business. He was subsequently induced, however, to send him to Emmanuel College, Cambridge; but, unable to support a continuance of the expense, our young critic accepted the situation of an usher at Harrow under Dr. Sumner. In 1769 he entered into deacon's orders, and those of priest in 1777. In 1771 he was created A.M. at Cambridge, by royal mandate, for the purpose of qualifying him to succeed Dr. Sumner in the mastership of Harrow; but, not succeeding, he opened a school at Stanmore, where he was followed by no less than forty-five of his old pupils. At this time he married Miss Maulevrier, a Yorkshire lady, by whom he had three sons and three daughters. In 1776, the establishment at Stanmore failing, he became master of the grammar-school at Colchester, whence, in 1778, he removed to a similar establishment at Norwich. In 1780 he was presented to the rectory of Asterly in Lincolnshire, and in 1781 received the degree of LL. D. He obtained in 1783 the perpetual curacy of Hatton in Warwickshire, where he ever afterwards resided, and was about the same time presented by bishop Lowth to a prebend in St. Paul's. In 1802 Sir Francis Burdett presented him, unsolicited, to the valuable living of Graffham in the county of Huntingdon. The death of this distinguished scholar took place at Hatton, March 26th, 1825, in his seventy-ninth year. Dr. Parr's career as an author began in 1760, by the publication of *Two Sermons on Education*; he in the following year printed *A Discourse on the late Fast*, which excited great attention. In 1787 he assisted his friend the Rev. Henry Homer in a new edition of the learned Bellendenus, which he inscribed to Messrs. Fox, Burke, and Lord North, the character of whose oratory he drew with uncommon felicity. Having now put an end to all hopes of preferment from government,

a subscription was made for him by the Whig club, which secured him an annuity of £300 per annum. In 1789 he republished *Tracts by Warburton and a Warburtonian*, which he prefaced with severe strictures on bishop Hurd. In 1790 he was engaged in the controversy respecting the authorship of White's Bampton Lectures, from which it appeared that he had a considerable share in them. In 1791, his residence having been in danger of destruction from the Birmingham rioters, in consequence of his intimacy with Dr. Priestley, he published an eloquent tract, entitled *A Letter from Irenopolis to the Inhabitants of Eleutheropolis*. Easter Tuesday, 1800, he preached his celebrated Spital sermon, which he soon after published, with a great number of notes; and on the death of Mr. Fox his Characters of the late Right Hon. Charles James Fox, selected and in part written by Philopatrius Varvicensis. In 1819 he reprinted *Speeches by Roger Long, and John Taylor, of Cambridge, with a Critical Essay and Memoirs of the Authors*; and, towards the close of life, composed a pamphlet, which did not appear until after his death, defending bishop Halifax from the charge of having become a convert to the church of Rome. Like Dr. Johnson, Parr is said to have been astonishingly powerful in conversation, and, though possessed of much of the warmth of a political partizan, he was of disinterested and independent feelings, speaking generally: yet we cannot reconcile with strict integrity his final continuance in a church from some of whose principal doctrines he for many years dissented. Of all his family, two daughters survived him, and he left a widow, whom he married in an advanced period of life.

PARRA, in ornithology, a genus of birds belonging to the order of grallæ; the characters of which are: the bill is tapering and a little obtuse; the nostrils are oval, and situated in the middle of the bill; the forehead is covered with fleshy caruncles which are lobated; the wings are small and spinous. There are sixteen species:—

1. *P. chavaria* is about the size of a dung-hill cock, and stands a foot and a half from the ground. The bill is of a dirty white color; the upper mandible similar to that in a dung-hill cock; the nostrils are oblong, perrivous: on both sides, at the base of the bill, is a red membrane, which extends to the temples. The irides are brown. On the hind head are about twelve blackish feathers, three inches long, forming a crest, and hanging downwards. The rest of the neck is covered with a thick black down. The body is brown, and the wings and tail inclined to black. On the bend of the wings are two or three spurs half an inch long. The belly is a light black. The thighs are half bare of feathers. The legs are very long, and of a yellow-red color. The toes are so long as to entangle one another in walking. 'This species,' says Latham, 'inhabits the lakes, &c., near the river Cinu, about thirty leagues from Carthagena, in South America, and feeds on vegetables. Its gait is solemn and slow; but it flies easily and swiftly. It cannot run, unless assisted by the wings at the same time. When any part of the

skin is touched by the hand, a crackling is felt, though it is very downy beneath the feathers; and, indeed, this down adheres so closely as to enable the bird at times to swim. The voice is clear and loud, but far from agreeable. The natives, who keep poultry in great numbers, have one of these tame, which goes along with the flock about the neighbourhood to feed during the day, when this faithful shepherd defends them against birds of prey; being able, by means of the spurs on the wings, to drive off birds as big as the carrion vulture, and even that bird itself. It is so far of the greatest use, as it never deserts the charge committed to its care, bringing them all home safe at night. It is so tame as to suffer itself to be handled by a grown person, but will not permit children to attempt the same. For the above account we are indebted to Linné, who seems to be the only one who has given any account of this wonderful bird.

2. *P. Dominica*, is about the size of the lap-wing. The bill is yellow, as are also the head and upper parts; the under are of a yellowish white, bordering on rose color. The legs are also yellow. This species inhabits several of the warmer parts of America and St. Domingo.

3. *P. jacana*, the spur-winged water-hen, is about the size of the water rail. The bill is in length about an inch and a quarter, of an orange color; and on the forehead is a membranous flap, half an inch long, and nearly as broad. On each side of the head also is another of the same, about a quarter of an inch broad, and both together they surround the base of the bill. The head, throat, neck, breast, and under parts, are black; and sometimes the belly is mixed with white, &c. This species inhabit Brasil, Guiana, and Surinam; but are equally common at St. Domingo, where they frequent the marshy places, sides of ponds, and streams, and wade quite up to the thighs in the water. They are also generally seen in pairs; and, when separated, call each other continually till they join again. They are very shy, and most common in the rainy seasons in May and November. They are at all times very noisy; their cry sharp and shrill, and may be heard a great way off. This is called by the French *chirurgen*. The flesh is accounted pretty good.

4. *P. Senegalla*, is about the same size with the *Dominica*. Its bill is also yellow, tipped with black; the forehead is covered with a yellow skin; the chin and throat are black; the head and upper parts of the body and lesser wing covers the gray-brown. The lower part of the belly, and the upper and under tail coverts, are dirty white. At the bend of the wing is a black spur. It inhabits Senegal, and thence derives its name. The negroes call them *uett uett*, the French the squallers, because, when they see a man, they scream and fly off. They generally fly in pairs.

5. *P. variabilis*, the spur-winged water-hen, is about nine inches long. The bill is about fourteen inches in length, and in color orange-yellow. On the forehead is a flap of red skin; the crown of the head is brown, marked with spots of a darker color; the hind part of the neck is much

the same, but of a deeper dye. The sides of the head, throat, fore part of the neck, breast, belly, thighs, and under tail-coverts, are white, with a few red spots on the sides of the belly and base of the thighs. On the fore part of the wing is a yellow spur, &c. The legs are furnished with long toes, as in all the others, the color of which is bluish ash. Latham says that one which came under his inspection from Cayenne was rather smaller. It had the upper parts much paler; over the eye was a streak of white passing no further, and unaccompanied by a black one. The hind part of the neck was dusky black. It had only the rudiment of a spur; and the red caruncle on the forehead was less, and laid back on the forehead. From these differences, this learned ornithologist conceives it to have differed either in sex or age from the other. This species inhabits Brasil, and is said to be pretty common about Carthagena and in South America.

PARRELS, in a ship, are frames made of trunks, ribs, and ropes, which, having both their ends fastened to the yards, are so contrived as to go round about the mast, that the yards by their means may go up and down upon the mast. These also, with the breast-ropes, fasten the yards to the masts.

PARRET, or PEDRED, a river of Somersetshire, which rises in the south part of that county, on the borders of Dorsetshire. Near Langport it is joined by the Ordered, augmented by the Ivel; and, about four miles from this junction, it is joined by the Tone or Thone, a pretty large river, rising among the hills in the western parts of this county. About two miles below the junction of the Tone, the Parret receives another considerable stream; and, thus augmented, it passes by the town of Bridgewater, and falls into the Bristol Channel in Bridgewater Bay.

PARRHASIUS, a famous ancient painter of Ephesus, or, as some say, of Athens: he flourished about the time of Socrates, according to Xenophon. It is said that he was excelled by Timanthes, but excelled Zeuxis. His subjects were very licentious.

PARRHASIUS (Janus), a famous grammarian in Italy, who was born at Cosenza, in Naples, in 1470. He was intended for the law, the profession of his ancestors; but he preferred classical learning. His real name was John Paul Parisius; but, according to the humor of the grammarians of that age, he called himself Janus Parrhasius. He taught at Milan with much reputation, being admired for a graceful delivery, in which he chiefly excelled other professors. He went to Rome when Alexander VI. was pope; but left it when in danger of being involved in the misfortunes of Cajetan and Savello, with whom he had some correspondence. Soon after, he was appointed professor of rhetoric at Milan; but, presuming to censure the teachers there, they accused him of a criminal converse with his scholars, which obliged him to leave Milan. He went to Vicenza, where he obtained a larger salary; and he held this professorship till the Venetian states were laid waste by the troops of the League; upon which he returned to his native country. By the recommendation of John

Lascaurus, he was called to Rome by Leo X., who appointed him professor of polite literature. But, exhausted by his studies and labors, he became so afflicted with the gout that he was obliged to return to Calabria, where he was taken ill of a fever, and died. There are several books ascribed to him; particularly Commentaries on Horace and Ovid.

PAR'RICIDE, *n. s.* } *Fr. parricide*; Latin
PAR'RICIDICAL, *adj.* } *parricida, parricidium.*
PAR'RICIDIOUS. } One who destroys his
 father: hence one who injures his country vi-
 tally, or his patron; the murder of a father: the
 adjective corresponding.

I told him the revenging gods
 'Gainst *parricides* did all their thunder bend;
 Spoke with how manifold and strong a bond
 The child was bound to the father. *Shakespeare.*
 Although he were a prince in military virtue ap-
 proved, and likewise a good law-maker; yet his
 cruelties and *parricides* weighed down his virtues.

Bacon.
 He is now paid in his own way, the *parricidius*
 animal, and punishment of murderers is upon him.

Brown.
 Morat was always bloody, now he's base;
 And has so far in usurpation gone,
 He will by *parricide* secure the throne. *Dryden.*

PARRICIDE is the murder of one's parents or children. By the Roman law it was punished in a severer manner than any other kind of homicide. After being scourged, the delinquents were sewed up in a leathern sack, with a live dog, a cock, a viper, and an ape, and thus cast into the sea. Solon, it is true, in his laws, made none against *parricide*; apprehending it impossible that one should be guilty of so unnatural a barbarity. And the Persians, according to Herodotus, entertained the same notion, when they adjudged all persons who killed their reputed parents to be bastards. Thus the English law treats it no otherwise than as simple murder, unless the child was also the servant of the parent. For, though the breach of natural relation is unobserved, yet the breach of civil or ecclesiastic connexions, when coupled with murder, denominates it a new offence; no less than a species of treason, called *parva prodition*, or *petit treason*; which, however, is nothing else but an aggravated degree of murder; although, on account of the violation of private allegiance, it is stigmatised as an inferior species of treason. And thus, in the ancient Gothic constitution, we find the breach, both of natural and civil relations, ranked in the same class with crimes against the state and sovereign.

PARROCEL, the name of three eminent French painters, of whom Joseph was born at Brignoles, in 1648; studied at Paris, and in Italy under Bourguignon; became eminent for painting battles, though he had never seen an army; was elected a member of the academy of painting; and died in Paris in 1704. Charles, his son and pupil, became also so eminent that he was appointed to paint the conquests of Louis XV. He died in Paris in 1752, aged sixty-three. Peter, born at Avignon, nephew to Joseph, was also his pupil, and performed many beautiful works at St. Germain, &c. His chief piece is at Marseilles. He died in 1739, aged seventy-five.

PAR'ROT, *n. s.* *Fr. perroquet.* A party-colored bird, remarkable for its imitation of the human voice.

Some will evermore peep through their eyes
 And laugh like *parrots* at a bag-piper. *Shakespeare.*
 Who taught the *parrot* human notes to try?
 'Twas witty want, fierce hunger to appease.

Dryden.
PARROT. See **PSITTACUS**.
PAR'RY, *v. n.* *Fr. parer.* To fence, or put
 by thrusts.

A man of courage who cannot fence, and will put
 all upon one thrust, and not stand *parrying*, has the
 odds against a moderate fencer *Locke*

I could
 By dint of logic strike thee mute;
 With learned skill, now push, now *parry*,
 From Darii to Bocardo vary. *Prior.*

While Bigotry, with well-dissembled fears,
 His eyes shut fast, his fingers in his ears,
 Mighty to *parry* and push by God's word
 With senseless noise, his argument the sword,
 Pretends a zeal for godliness and grace,
 And spits abhorrence in the Christian's face.

Cowper.
PARRY (Richard), D.D., a learned English
 divine, educated at Oxford, where he graduated
 in 1757. He was rector of Wichampton, and
 minister of Market Harborough, where he died
 in 1780. He wrote many useful religious trea-
 tises.

PARRY (Caleb Hillier), M. D., F.R.S., an
 ingenious physician and natural historian of
 Bath, father of the celebrated captain Parry.
 Dr. Parry is known as the author of *A Treatise*
on Wool, containing the result of a series of ex-
 periments on this staple commodity to which
 his attention was originally directed by the
 circumstance of king George III. presenting two
 Merino rams to the Bath and West of England
 Society. But his principal work is the *Elements*
of Pathology, printed in 1816. He died March
 9th, 1822, having been deprived of the use of
 his faculties by palsy in 1816.

PARSE, *v. a.* *Lat. pars.* To resolve
 a sentence into its elements or parts of speech.

Let him construe the letter into English, and
parse over perfectly. *Ascham's Schoolmaster.*

Let scholars reduce the words to their original,
 to the first case of nouns, or first tense of verbs, and
 give an account of their formations and changes
 their syntax and dependencies, which is called *para-*
sing. *Watts on the Mind.*

The nature of the subject, as well as the adapta-
 tion of it to learners, requires that it should be
 divided into two parts, viz. *parsing*, as it respects
 etymology alone; and *paring*, as it respects both
 etymology and syntax. *Murray.*

PARSHORE, a town of Worcestershire,
 seven miles from Worcester, and 102 from Lon-
 don, on the north side of the Avon, near its
 junction with the Bow, being a considerable
 thoroughfare in the lower road from Worcester
 to London. A religious house was founded
 here in 604, a small part of which now remains,
 and is used as the parish church of Holy Cross,
 the whole of which contained above ten acres.
 The abbey church was 250 feet long, and 120
 broad. The parish of Parshore is of great ex-
 tent, and has within its limits many manors
 and chapelries. At present it has two parishes,

Holy Cross and St. Andrew. In Holy Cross church are several very antique monuments. Its chief manufacture is stockings. Markets on Tuesday and Saturday.

PARSIMONIOUS, *adj.* } Lat. *parsimonia*,
PARSIMONIOUSLY, *adv.* } à parco, to save.
PARSIMONIOUSNESS, *n. s.* } Frugal; saving;
PARSIMONY. } sparing: hence covetous: the adverb and noun substantive follow these senses: parsimony is frugality; disposition to save or spare; niggardliness; covetousness.

A prodigal king is nearer a tyrant, than a *parsimonious*: for store at home draweth not his contemplations abroad, but want supplieth itself of what is next.

Bacon.

The ways to enrich are many; *parsimony* is one of the best, and yet it is not innocent; for it withholdeth men from works of liberality.

Id.

Parsimonious age and rigid wisdom.

Rowe.

Extraordinary funds for one campaign may spare us the expense of many years, whereas a long *parsimonious* war will drain us of more men and money.

Addison.

These people, by their extreme *parsimony*, soon grow into wealth from the smallest beginnings.

Swift.

Our ancestors acted *parsimoniously*, because they only spent their own treasure for the good of their posterity; whereas we squandered away the treasures of our posterity.

Id.

To thrift and *parsimony* much inclined,
She yet allows herself that boy behind;
The shivering urchin bending as he goes,
With slip-shod heels, and dew-drop at his nose;
His predecessor's coat advanced to wear,
Which future pages yet are doomed to share.

Cowper.

PARSLEY, *n. s.* Fr. *persil*; Wel. *persli*; Belg. *paterselay*, of Lat. *petrostelinum* (Gr. *πετρα* a rock, and *σέλιον*), a kind of parsley growing among rocks. An herb.

A wench married in the afternoon, as she went to the garden for *parsley* to stuff a rabbit. *Shakespeare.*

Green beds of *parsley* near the river grow.

Dryden.

Sempronia dug Titus out of the *parsley*-bed, as they use to tell children, and thereby became his mother.

Locke.

PARSLEY, in botany. See *APIUM*.

PARSLEY, BASTARD. See *CAUCALIS*.

PARSLEY, FOOL'S. See *ÆTHUSA*.

PARSLEY, MOUNTAIN. See *ATHAMANTA*.

PARSNIP, *n. s.* Lat. *pastinaca*. A plant.

November is drawn in a garment of changeable green, and bunches of *parsneps* and turneps in his right hand.

Peucham.

PARSNIP, in botany. See *PASTINACA*.

PARSNIP, COW'S. See *HERACLEUM*.

PARSON, *n. s.* } From Lat. *persona*, be-
PARSONAGE. } cause the parson 'omnium *personam* in ecclesia sustinet.' The priest or clergyman of a parish; one that has a parochial charge of souls; also applied to the teachers of the Presbyterians and Dissenters; and often in banter to all these parties.

Sometimes comes she with a tithe-pig's tail,
Tickling the *parson* as he lies asleep;
Then dreams he of another benefice. *Shakespeare.*

Abbot was preferred by king James to the bishoprick of Coventry and Litchfield, before he had been *parson*, vicar, or curate of any parish church.

Clarendon.

A PARSON is one that has full possession of all the rights of a parochial church. He is called parson, persona, because by his person the church is represented; and he is in himself a body corporate, to protect and defend the rights of the church (which he personates) by a perpetual succession. He is sometimes called the rector or governor of the church; but the appellation of parson is the most legal and most honorable title that a parish priest can enjoy; because such a one (Sir Edward Coke observes) and he only, is said *vicem seu personam ecclesie gerere*. A parson has, during his life, the freehold in himself of the parsonage house, the glebe, the tithes, and other dues. But these are sometimes appropriated; that is, the benefice is perpetually annexed to some spiritual corporation, either sole or aggregate, being the patron of the living; whom the law esteems equally capable of providing for the service of the church as any single private clergyman. The appropriating corporations, or religious houses, were wont to depute one of their own body to perform divine service, and administer the sacraments in those parishes of which the society was thus the parson. This officiating minister was in reality no more than a curate, deputy, or vicegerent, of the appropriator, and therefore called vicarius, vicar. His stipend was at the discretion of the appropriator, who was, however, bound of common right to find somebody, *qui illi de temporalibus, episcopo de spiritualibus, debeat respondere*. But this was done in so scandalous a manner, and the parishes suffered so much by the neglect of the appropriators, that the legislature was forced to interpose: and accordingly it is enacted, by statute 15 Rich. II. c. 6, that in all appropriations of churches the diocesan bishop shall ordain (in proportion to the value of the church) a competent sum to be distributed among the poor parishioners annually; and that the vicarage shall be sufficiently endowed. The parish frequently suffered, not only by the want of divine service, but also by withholding those alms for which, among other purposes, the payment of tithes was originally imposed: and therefore in this act a pension is directed to be distributed among the poor parochians, as well as a sufficient stipend to the vicar. But he, being liable to be removed at the pleasure of the appropriator, was not likely to insist too rigidly on the legal sufficiency of the stipend; and therefore, by statute 4 Hen. IV. c. 12, it is ordained that the vicar shall be a secular person, not a member of any religious house; that he shall be vicar perpetual, not removeable at the caprice of the monastery; and that he should be canonically instituted and inducted, and be sufficiently endowed, at the discretion of the ordinary, for these three express purposes, to do divine service, to inform the people, and to keep hospitality. The endowments, in consequence of these statutes, have usually been by a portion of the glebe or land belonging to the parsonage, and a particular share of the tithes, which the appropriators found it most troublesome to collect, and which are therefore generally called petty or small tithes; the greater, or prædial tithes, being still reserved to their own use. But one and

the same rule was not observed in the endowment of all vicarages. Hence some are more liberally, and some more scantily endowed : and hence the tithes of many things, as wood in particular, are in some parishes rectorial, and in some vicarial tithes. The distinction, therefore, of a parson and vicar is this : the parson has for the most part the whole right to all the ecclesiastical dues in his parish ; but a vicar has generally an appropriator over him, entitled to the best part of the profits, to whom he is in effect perpetual curate, with a standing salary. Though in some places the vicarage has been considerably augmented by a large share of the great tithes ; which augmentations were greatly assisted by statute 27 Car. II. c. 8, enacted in favor of poor vicars and curates, which rendered such temporary augmentations (when made by the appropriators) perpetual. The method of becoming a parson or vicar is much the same. To both there are four requisites necessary ; holy orders, presentation, institution, and induction. By common law, a deacon, of any age, might be instituted and inducted to a parsonage or vicarage ; but it was ordained by statute 13 Eliz. c. 12, that no person under twenty-three years of age, and in deacon's orders, should be presented to any benefice with cure ; and, if he were not ordained priest within one year after his induction, he should be ipso facto deprived : and now, by statutes 13 and 14 Car. II. c. 4, no person is capable to be admitted to any benefice, unless he has been first ordained a priest ; and then he is, in the language of the law, a clerk in orders. But if he obtain orders, or a license to preach, by money or corrupt practices (which seem to be the true, though not the common, notion of simony), the person giving such orders forfeits £40, and the person receiving £10, and is incapable of any ecclesiastical preferment for seven years after. Any clerk may be presented to a parsonage or vicarage ; that is, the patron, to whom the advowson of the church belongs, may offer his clerk to the bishop of the diocese to be instituted. But, when he is presented, the bishop may refuse him upon many accounts. As, 1. If the patron is excommunicated, and remains in contempt forty days ; or, 2. If the clerk be unfit : which unfitness is of several kinds. First, with regard to his person ; as if he be a bastard, an outlaw, on excommunicate, an alien, under age, or the like. Next, with regard to his faith or morals ; as for any particular heresy, or vice that is malum in se ; but if the bishop alleges only in generals, as that he is schismaticus inverteatus, or objects a fault that is malum prohibitum merely, as haunting taverns, playing at unlawful games, or the like, it is not good cause of refusal. Or, lastly, the clerk may be unfit to discharge the pastoral office for want of learning. In any of which cases the bishop may refuse the clerk. In case the refusal is for heresy, schism, inability of learning, or other matter of ecclesiastical cognizance, there the bishop must give notice to the patron of such his cause of refusal, who, being usually a layman, is not supposed to have knowledge of it ; else he cannot present by lapse ; but, if the cause be temporal,

there he is not bound to give notice. If an action at law be brought by the patron against the bishop for refusing his clerk, the bishop must assign the cause. If the case be of a temporal nature, and the fact admitted (for instance, outlawry), the judges of the king's courts must determine its validity, or whether it be sufficient cause of refusal : but, if the fact be denied, it must be determined by a jury. If the cause be of a spiritual nature (as heresy, particularly alleged) the fact, if denied, shall also be determined by a jury : and, if the fact be admitted or found, the court, upon consultation and advice of learned divines, shall decide its sufficiency. If the cause be want of learning, the bishop need not specify in what points the clerk is deficient, but only allege that he is deficient ; for statute 9 Edw. II. st. 1, c. 13, is express, that the examination of the fitness of a person presented to a benefice belongs to the ecclesiastical judge. But because it would be nugatory in this case to demand the reason of refusal from the ordinary, if the patron were bound to abide by his determination, who has already pronounced his clerk unfit : therefore, if the bishop returns the clerk to be minus sufficiens in literatura, the court shall write to the metropolitan to re-examine him, and certify his qualifications ; which certificate of the archbishop is final. If the bishop has no objections, but admits the patron's presentation, the clerk so admitted is next to be instituted by him ; which is a kind of investiture of the spiritual part of the benefice ; for, by institution, the care of the souls of the parish is committed to the charge of the clerk. When a vicar is instituted, he (besides the usual forms) takes, if required by the bishop, an oath of perpetual residence ; for the maxim of law is, that vicarius non habet vicarium : and, as the non-residence of the appropriators was the cause of the perpetual establishment of vicarages, the law judges it very improper for them to defeat the end of their constitution, and by absence to create the very mischief which they were appointed to remedy ; especially as, if any profits are to arise from putting in a curate and living at a distance from the parish, the appropriator, who is the real parson, has undoubtedly the elder title to them. When the ordinary is also the patron, and confers the living, the presentation and institution are one and the same act, and are called a collation to a benefice. By institution or collation the church is full, so that there can be no fresh presentation till another vacancy, at least in the case of a common patron ; but the church is not full against the king till induction : nay, even, if a clerk is instituted upon the king's presentation, the crown may revoke it before induction, and present another clerk. Upon institution, also, the clerk may enter on the parsonage house and glebe, and take the tithes ; but he cannot grant or let them, or bring an action for them, till induction. See INDUCTION. For the rights of a parson or vicar, in his tithes and ecclesiastical dues, see TITHES. As to his duties, they are so numerous that it is impracticable to recite them here with any tolerable conciseness or accuracy ; but the reader who has occasion may consult B. Gibson's

Codex, Johnson's Clergyman's Vade Mecum, and Burn's Ecclesiastical Law.

A **PARSONAGE** is a rectory, or parish church, endowed with a glebe, house, lands, tithes, &c., for the maintenance of a minister, with cure of souls within such parish.

PARSONS (James), M. D. and F. R. S., a late eminent and learned physician, born at Barnstaple, Devonshire, in 1705. He was educated in Dublin, whence he went to Paris, and improved himself under Astruc, Lemery, Hunaud, Le Cat, Bouldue, and Jussieu. He graduated at Rheims in 1736, came to London, and was made F. R. S. in 1740. He was also a member of the Antiquarian, Medical, and Agricultural Societies. In 1751 he was admitted a licentiate of the College of Physicians, and appointed physician to St. Giles's infirmary. He also assisted Dr. James Douglas in anatomy. He died in 1770. He was much esteemed by the literati at home, and had an extensive correspondence with those abroad. His publications are numerous and valuable. Of these we shall only mention his *Remains of Japhet*; being *Historical Enquiries into the affinity and origin of the European Languages*. Its object is to prove the antiquity of the first inhabitants of these islands.

PARSONS (Robert), an eminent writer of the church of Rome, born at Nether Stowey, near Bridgewater, in 1546, and educated at Baliol College, Oxford, where he distinguished himself as a zealous Protestant and an acute disputant; but, being charged by the society with incontinency and embezzling the college money, he went to Flanders, and declared himself a Catholic. After travelling to several other places, he effected the establishment of the English seminary at Rome, and procured father Allen to be chosen rector of it. He himself was appointed the head of the mission to England, to dethrone queen Elizabeth, and extirpate the Protestant religion. He accordingly came over in 1580, and took some bold steps for that purpose, in which he concealed himself with great art, travelling about the country to gentlemen's houses, disguised in the habit, sometimes of a soldier, sometimes of a gentleman, and at other times like a minister or an apparitor; but, father Campion being seized and committed to prison, our author eloped, and went to Rome, where he was made rector of the English seminary. He had long entertained the most sanguine hopes of converting to the popish faith the young king of Scots, which he considered as the most effectual means of bringing over his subjects to the same religious principles; but, finding this impossible, he published in 1594 his celebrated book, under the name of Doleman, to overthrow James's title to the crown of England. He died in Rome in 1610, and was buried in the chapel of the English College. He also wrote, 1. *A Defence of the Catholic Hierarchy*; 2. *The Liturgy of the Sacrament of the Mass*; 3. *A Memorial for the Reformation*; and several other tracts.

PART, *n. s., v. a., v. n. & adv.*

PARTABLE, *adj.*

PARTAGE, *n. s.*

PARTIBLE, *adj.*

PARTLY, *adv.*

Fr. *part*;
Italian, Spanish,
and Portuguese *parte*;
Teuton. *part*;

Belg. *paert*; Heb. פֶּרֶץ. A section or division of a whole; a portion: hence, a member; particular; ingredient; quality or power; region; proportional quantity or share; concern; particular business or duty; often a character: side; interest or faction; reciprocal relation; any thing relating or belonging; action, conduct; in 'good or ill part' taken as a good or ill action: 'for the most part' means, in most instances; commonly, to part: to divide; separate; share; distribute; break or keep asunder: as a neuter verb, to take share; quit; be separated; take farewell; go away: 'to part with' is also to quit; resign; be separated from; lose: partable and partible mean, divisible; separable: partage [Fr. *partage*], separation; division; act of dividing: partly, in part, degree, or measure.

The people stood at the nether *part* of the mount.

Erodus.

Part it in pieces, and pour oil thereon.

Leviticus.

Sheba said, we have no *part* in David, neither have we inheritance in the son of Jesse. 2 *Samuel*.

Nought but death shall *part* thee and me.

Ruth.

As his *part* is, that goeth down to the battle, so shall his *part* be, that tarrieth by the stuff; they shall *part* alike.

Isaiah.

When he had gone over those *parts*, he came into Greece.

Acts xx. 2.

All that believed, sold their goods, and *parted* them to all men, as every man had need.

Acts ii.

Forasmuch as the children are partakers of flesh and blood, he also took *part* of the same.

Hebrews.

The ungodly made a covenant with death, because they are worthy to take *part* with it.

Wisdom i. 16.

Thou marble hewest, ere long to *part* with breath, And houses rearest, unmindful of thy death.

Sandys.

For Zelmene's *part* she would have been glad of the fall, which made her bear the sweet burden of Philoclea, but that she feared she might receive some hurt.

Sidney.

Who is courteous, noble, liberal, but he that hath the example before his eyes of Amphialus; where are all heroic *parts*, but in Amphialus?

Id.

Although no man was, in our *parts*, spoken of but he, for his manhood; yet, as though therein he excelled himself, he was called the courteous Amphialus.

Id.

Such licentious *parts* tend, for the most *part*, to the hurt of the English, or maintenance of their own lewd liberty.

Spenser.

God accepteth it in *good part*, at the hands of faithful men.

Hooker.

That *part*, which, since the coming of Christ, partly hath embraced, and partly shall hereafter embrace the Christian religion, we term, as by a more proper name, the church of Christ.

Id.

The citizens were for the most *part* slain or taken.

Knolles.

Helen's cheeks, but not her heart:

Atalanta's better *part*.

Shakespeare.

When I have spoken of you dispraisingly,

Hath ta'en your *part*.

Id.

That *part*.

Was aptly fitted, and naturally performed. *Id.*

Find him, my lord,

And chide him hither straight: this *part* of his Conjoins with my disease.

Id.

I conjure thee, by all the *parts* of man,
Which honour does acknowledge. *Id.*

In the narrow seas, that *part*
The French and English, there miscarried
A vessel of our country. *Id.*
He wrung Bassanio's hand, and so they *parted*. *Id.*

Ere I could
Give him that *parting* kiss, which I had set
Betwixt two charming words, comes in my father. *Id.*

For her sake I do rear up her boy;
And for her sake I will not *part* with him. *Id.*
His hot love was *partable* among three other of his
mistresses. *Camden's Remains.*

Let them be so furnished and instructed for the
military *part*, as they may defend themselves. *Bacon.*

The pneumatical *part*, which is in all tangible
bodies, and hath some affinity with the air, per-
formeth the *parts* of the air: as, when you knock
upon an empty barrel, the sound is, in *part*, created
by the air in the outside, and, in *part*, by the air in
the inside. *Id.*

This law wanted not *parts* of prudent and deep
foresight; for it took away occasion to pry into the
king's title. *Id.*

Make the mou *ds partible*, glued or cemented to-
gether, that you may open them, when you take out the
fruit. *Id.*

Let not thy divine heart
Forethink me any ill;
Destiny may take thy *part*,
And may thy fears fulfil. *Donna.*

It was so strong, that never any filled
A cup, where that was but by drops instilled,
And drunke it off; but 'twas before allaid
With twenty *parts* in water. *Chapman.*
For my *part*, I have no servile end in my labour,
which may restrain or embase the freedom of my
judgment. *Wotton.*

Henry had divided
The person of himself into four *parts*. *Daniel.*

And that he might on many props repose,
He strengths his own, and who his *part* did take. *Id.*

Store of plants, the effects of nature; and where
the people did their *part*, such increase of maize. *Heylin.*

Of a plain and honest nature, for the most *part*
they were found to be. *Id.*

God is the master of the scenes: we must not
chase which *part* we shall act; it concerns us only
to be careful that we do it well. *Taylor.*

Inquire not whether the sacraments confer grace
by their own excellency, because they, who affirm
they do, require so much duty on our *parts*, as they
also do, who attribute the effect to our moral dispo-
sition. *Id.*

An affectionate wife, when in fear of *parting* with
her beloved husband, heartily desired of God his life
or society, upon any conditions that were not sinful.
Id.

The same body, in one circumstance, is more
weighty; and, in another, is more *partible*. *Digby.*

Besides his abilities as a soldier, which were emi-
nent, he had very great *parts* of breeding, being a
very great scholar in the political *parts* of learning.
Clarendon.

Accuse not Nature, she hath done her *part*;
Do thou but thine. *Milton's Paradise Lost.*

Powerful hands will not *part*
Easily from possession won with arms. *Id.*

So *parted* they; the angel up to heaven
From the thick shade, and Adam to his bower. *Id.*

Call up their eyes, and fix them on your exam-
ple; that so natural ambition might take *part* with
reason and their interest to encourage imitation. *Glansville.*

These conclude that to happen often, which hap-
peneth but sometimes; that never, which happeneth
but seldom; and that always, which happeneth for
the most *part*. *Broune.*

Celia, for thy sake, I *part*
With all that grew so near my heart;
And, that I may successful prove,
Transform myself to what you love. *Waller.*

A brand preserved to warm some prince's heart,
And make whole kingdoms take her brother's *part*. *Id.*

Jove did both hosts survey,
And, when he pleased to thunder, *part* the fray. *Id.*

Lixivate salts, though, by piercing the bodies of
vegetables, they dispose them to *part* readily with
their tincture, yet some tinctures they do not only
draw out, but likewise alter. *Boyle.*

The Scripture tells us the terms of this covenant
of God's *part* and our's; namely, that he will be our
God, and we shall be his people. *Tillotson.*

When your judgment shall grow stronger, it will
be necessary to examine, *part* by *part*, those works
which have given reputation to the masters. *Dryden.*

Of heavenly *part*, and *part* of earthly blood;
A mortal woman mixing with a god. *Id.*

Go not without thy wife, but let me bear
My *part* of danger, with an equal share. *Id.*
All *parts* resound with tumults, plaints, and fears,
And grisly death, in sundry shapes, appears. *Id.*
All the world,

As 'twere the bus'ness of mankind to *part* us,
Is armed against my love. *Id.*

Thy father
Embraced me, *parting* for the' Etrurian land. *Id.*

Our ideas of extension and number, do they not
contain a secret relation of the *parts*? *Locke.*

This was the design of a people that were at li-
berty to *part* asunder, but desired to keep in one body. *Id.*

The ideas of hunger and warmth are some of the
first that children have, and which they scarce ever
part with. *Id.*

Men have agreed to a disproportionate and un-
equal possession of the earth, having found out a
way, how a man may fairly possess more land than
he himself can use the product of, by receiving in
exchange for the overplus, gold and silver; this
partage of things, in an equality of private posses-
sions, men have made practicable out of the bounds
of society, without compact, only by putting a value
on gold and silver, and tacitly agreeing in the use
of money. *Id.*

What! *part*, for ever *part*? unkind Ismena;
Oh! can you think that death is half so dreadful,
As it would be to live without thee? *Smith.*

They thought it reasonable to do all possible ho-
nour to their memories; *partly* that others might be
encouraged to the same patience and fortitude, and
partly that virtue, even in this world, might not lose
its reward. *Nelson.*

For my *part*, I think there is nothing so secret
that shall not be brought to light, within the world.
Burnet.

Solomon was a prince adorned with such *parts* of

mind, and exalted by such a concurrence of all prosperous events to make him magnificent.

South.

What a despicable figure must mock-patriots make, who venture to be hanged for the ruin of those civil rights which their ancestors, rather than *part with*, chose to be cut to pieces in the field of battle!

Addison's Freeholder.

The inhabitants of Naples have been always very notorious for leading a life of laziness and pleasure, which I take to arise out of the wonderful plenty of their country, that does not make labour so necessary to them, and partly out of the temper of their climate, that relaxes the fibres of their bodies, and disposes the people to such an idle indolent humour.

Id. on Italy.

The arm thus waits upon the heart,

So quick to take the bully's part;

That one, tho' warm, decides more slow

Than t'other executes the blow. *Prior.*

The liver minds his own affairs,

And *parts* and strains the vital juices. *Id.*

Many irregular and degenerate *parts*, by the defective oeconomy of nature, continue complicated with the blood. *Blackmore.*

The good things of this world so delight in, as remember, that we are to *part with* them, to exchange them for more durable enjoyments.

Atterbury.

The Indian princes discover fine *parts* and excellent endowments, without improvement. *Felton.*

Agamemnon provokes Apollo, whom he was willing to appease afterwards at the cost of Achilles, who had no *part* in his fault. *Pope.*

Jove himself no less content would be
To *part* his throne, and share his heaven with thee. *Id.*

If it pleases God to restore me to my health, I shall make a third journey; if not, we must part, as all human creatures have parted. *Swift.*

As for riches and power, our Saviour plainly determines, that the best way to make them blessings, is to *part with* them. *Id.*

Any employment of our talents, whether of our *parts*, our time, or money, that is not strictly according to the will of God, that is not for such ends as are suitable to his glory, are as great absurdities and failings. *Leve.*

Eusebia brings them up to all kinds of labour that are proper for women, as sewing, knitting, spinning, and all other *parts* of housewifery. *Id.*

May such success attend the pious plan,
May Mercury once more embellish man,
Grace him again with long forgotten arts,
Reclaim his taste, and brighten up his *parts*.

Cowper.

Friends meet to *part*; Love laughs at faith;
True foes, once met, are joined till death!

Byron.

PART, ALIQUANT, is a quantity which, being repeated any number of times, becomes always either greater or less than the whole. Thus 5 is an aliquant part of 17, and 9 an aliquant part of 10, &c. The aliquant part is resolvable into aliquot parts. Thus 15, an aliquant part of 20, is resolvable into 10 one half, and 5 a fourth part of the same.

PART, ALIQUOT, is a quantity which, being repeated any number of times, becomes equal to an integer. Thus 6 is an aliquot part of 24, and 5 an aliquot part of 30, &c.

PARTS OF SPEECH, in grammar. See **GRAMMAR** under **ENGLISH LANGUAGE**.

PARTAKE, *v. n. & v. a.* } From *part* and *PARTAKE*. } *take*. To take part

or share with or (as Mr. Locke uses it) is; to participate; have property in or claim to; be admitted to combine or conspire; as a verb active, to share; have part in; admit to part (obsolete): partaker follows all these senses, and is used with *in*, *with*, and *of*.

Thou consentedst, and hast been *partaker* with adulterers. *Psalms.*

If we had been in the days of our fathers, we would not have been *partakers* with them in the blood of the prophets. *Matthew.*

My friend, hight Philemon, I did *partake*

Of all my love, and all my privacy.

Who greatly joyous seemed for my sake. *Spenser.*

They whom earnest lets hinder from being *partakers* of the whole, have yet, through length of divine service, opportunity for access unto some reasonable part thereof. *Hooker.*

You may *partake* of any thing we say;

We speak no treason. *Shakspeare. Richard III.*

By and by, thy bosom shall *partake*

The secrets of my heart. *Shakspeare.*

Your exultation *partake* to every one. *Id.*

Didst thou

Make us *partakers* of a little gain;

That now our loss might be ten times as much? *Id.*

Wish me *partaker* in thy happiness,

When thou do'st meet good hap. *Id.*

The attorney of the dutchy of Lancaster *partakes* partly of a judge, and partly of an attorney-general. *Bacon.*

He took upon him the person of the duke of York, and drew with him complices and *partakers*. *Id.*

At season fit

Let her with thee *partake* what thou hast heard. *Milton.*

As it prevents factions and *partakings*, so it keeps the rule and administration of the laws uniform. *Hale.*

Partake and use my kingdom as your own,
And shall be yours while I command the crown. *Dryden.*

My royal father lives!

Let every one *partake* the general joy. *Id.*

How far brutes *partake* in this faculty is not easy to determine. *Locke.*

Truth and falsehood have no other trial but reason and proof, which they made use of to make themselves knowing, and so must others too that will *partake* in their knowledge. *Id.*

With such she must return at setting light,

Though not *partaker*, witness of their night. *Prior.*

His bitterest enemies were *partakers* of his kindness, and he still continued to entreat them to accept of life from him, and, with tears, bewailed their infidelity. *Calamy.*

PARTANICO, a pleasant town in the Val di Mazzara, Sicily, situated at the base of the Palermo Mountains. The neighbouring country, though fertile, is subject to the Mal-aria. From this to Palermo, a distance of twenty-four miles, there is an excellent carriage-road across the mountains, formed with great labor. Inhabitants 5000.

PARTERRE, *n. s.* Fr. *parterre*, of Lat. *par terra*. A level part or division of ground, that, for the most part, faces the best front of a house.

The vast *parterres* a thousand hands shall make;
Lo! Cobham comes, and floats them with a lake. *Pope.*

There are as many kinds of gardening as of poetry;

your makers of *parterres* and flower gardens are epigrammatists and sonneteers.

Spectator.

This civil bickering and debate

The goddess chanced to hear,

And flew to save, ere yet too late,

The pride of the *parterre*.

Couper.

PARTERRES, in gardening, are of two kinds; the plain, and *parterres* of embroidery. Plain *parterres* are most valuable in England, because of the firmness of the English grass turf, which is superior to that of any other part of the world: and the *parterres* of embroidery are cut into shell and scroll work, with alleys between them. An oblong, or long square, is accounted the most proper figure for a *parterre*; and a *parterre* should indeed be always twice as long as it is broad, because, according to the laws of perspective, a long square always sinks to a square; and an exact square always appears less than it really is. As to the breadth of a *parterre*, it is to be proportionable to the front of the house; but less than 100 feet in breadth is too little. There should be on each side the *parterre* a terrace walk raised for a view, and the flat of the *parterre* between the terraces should never be more than 300 feet at the utmost in breadth, and about 140 feet in width, with twice and a half that in length, is esteemed a very good size and proportion.

Mr. Loudon observes that in ornamental gardens, and *parterres* of every kind, the soil should be unmanured, and rather poor than otherwise; but the situation and exposure should be good, and the surface of the ground beautifully varied. The extent of them must be in proportion to the nature of the place to which they belong. In general they need not be large. In almost every kind a few trees and shrubs should be introduced, to remove from the general view the appearance of insipidity, and to break it into separate scenes; one of which alone should be seen at a time, that, the extent of vision being circumscribed, the spectator may thus be induced to examine or admire the minute beauties of single objects, or small compositions. And it is observed that, where *parterres* are intermingled with lawns, those disgusting lines of separation at the edges of walks, or round groups and dug patches of flowers or shrubs, which abound every where, should not be introduced; the gravel of the walk, and the earth at the edges of the dug patches or groups, ought to be kept nearly on a level with the grass on the lawn. Where much culture is requisite in the groups, the line of separation should be delicate and graceful; and where this is not necessary, or not much attended to, both the lines of the walk, and the lines of the dug group, or patch, should blend and harmonise, and, in a natural easy manner, glide insensibly into each other.

PARTHAON, in fabulous history, the son of Neptune, or of Agenor and Epicaste, and father of Œneus, Sterope, &c., by his wife Euryte.

PARTHENAY (John de), lord of Soubise, an eminent French commander, born in 1512. He commanded the troops in Italy in 1550; and supported the Protestant cause till his death in 1566. He left one daughter.

PARTHENAY (Catharine de), niece to the pre-

ceding, and lady of Soubise, was married in 1568 to the baron de Pons, and in 1575 to René Visc. Rohan, by whom she had the famous duke of Rohan, who so bravely defended the Protestant cause during the civil wars under Louis XIII. She published poems, comedies, and tragedies. Her daughter Catharine was eminent for virtue, and married the duke of Deux Ponts. She died in 1607, and her mother in 1631.

PARTHENIA, in literature, is the title of a curious thin folio book of lessons for the Virginal, that was engraved on copper, and published in the reign of king James I. The full title is, *Parthenia*, or the Maidenhead of the first Musicke that ever was printed for the Virginalists. Composed by three famous masters: William Byrd, Dr. John Bull, and Orlando Gibbons, Gentlemen of his Majesties most illustrious Chappel. Bird being called 'gentleman of his majesties chappel,' seems here to imply that he was living when it was published. King James died in 1525, and Bird in 1523. The first three movements in this collection, consisting of a prelude; pavana; Sir William Peder; and a galiardo; are in G minor, and may be called a suite of lessons. The fourth and fifth movements, prelude; and galiardo, Mrs. Marye Brownlo, in C; and the sixth, seventh, and eighth, pavana, the earl of Salisbury; galiardo primo; and galiardo secundo. Mrs. Marye Brownlo, in A minor, constitute what may likewise be regarded as two other suites de pieces, or sets of lessons.

PARTHENIA, or **PARTHENOS**, in mythology, an epithet of Minerva, because she is said to have preserved her virginity. When the Rhodians neglected her worship, and the cultivation of the fine arts, the Athenians began to distinguish themselves in this respect, and took her for their patroness. Accordingly they dedicated to her a magnificent temple under the name of Parthenos, the virgin. Phidias adorned it with a statue of gold and ivory, which was a master-piece; and the Athenians also celebrated to her honor a festival, which was afterwards called 'panathenaia.'

Parthenos was also a name given to Juno, from a notion that this goddess, by bathing herself every year in the fountain called Canathos, which was at Nauplia, recovered her virginity.

PARTHENII, citizens of ancient Sparta, who owed their existence to a singular circumstance. During the Messenian war the Spartans had been ten years absent from their city; and 'they had bound themselves by a solemn oath not to return till they had subdued Messenia. The magistrates as well as the women of Sparta were alarmed at the danger of such long absence depopulating the country. A law was therefore enacted, that all the young men who had not taken the oath should have free access to the unmarried women. The fruits of this promiscuous intercourse were named Παρθενιοι, Parthenii, i. e. sons of virgins. When they grew up, knowing they had no legitimate fathers, and of course no inheritance, they conspired with the Helots to massacre the other citizens, and seize their possessions. The conspiracy was discovered, but the Spartans, instead of punishing them, permitted them to emigrate to Italy, where, un-

der their leader Phalantus, they settled in Magna Græcia, and built Tarentum, A.A. C. 707. Justin, Strabo, Paus. Plut..

PARTHENIUM, in botany, bastard feverfew, or kiu-hoa of the Chinese, a genus of the pentandria order, belonging to the monœcia class of plants; and in the natural method ranking under the forty-ninth order. *compositæ*. The MALE CAL. is common and pentaphyllous; the florets of the disk monopetalous: the FEMALE has five florets of the radius, each with two male florets behind it: the intermediate female superior; the seed is naked. It has been much neglected in Europe, having on account of its smell been banished from our parterres. It is therefore indebted for its culture to the distinguished rank it holds among the Chinese flowers. The skill of the florists, and their continual care, have brought this plant to so great perfection that Europeans scarcely know it. The elegance and lightness of its branches, the beautiful indentation of its leaves, the splendor and duration of its flowers, seem indeed to justify the florimania of the Chinese for this plant. They have, by their attention to its culture, procured more than 300 species or varieties of it: every year produces a new one. Parthenium is propagated in China by seeds, and by suckers, grafts, and slips. When the florists have a fine plant, they suffer the seeds to ripen, and about the end of autumn sow them in well-prepared earth. Some keep them in this manner curing winter, others sow them in spring. Provided they are watered after the winter, they shoot forth, and grow rapidly. After the parthenium is flowered, all its branches are cut three inches from the root, the earth is hoed around, and a little dung is mixed with it; and, when the cold becomes severe, the plant is covered with straw, or an inverted pot. Those that are in vases are transported to the greenhouse, where they are uncovered and watered, and they shoot forth a number of stems; of these some florists leave only two or three, others pull up the stalk, together with the whole root, and divide it into several portions, which they transplant elsewhere. Some join two slips of different colors, in each of which, towards the bottom, they make a long notch, almost to the pith, and afterwards tie them together with packthread, that they may remain closely united: by these means they obtain beautiful flowers, variegated with whatever colors they choose. Parthenium requires a good exposure, and fresh moist air that circulates freely: when shut up closely, it soon languishes. The earth in which it is planted ought to be rich, moist, and loamy, and prepared with great care. For refreshing it, the Chinese use only rain or river water; and in spring they mix with this water the excrements of silkworms, or the dung of poultry; in summer they leave the feathers of ducks or fowls to infuse in it for several days, after having thrown into it a little saltpetre; but in autumn they mix with the water a greater or smaller quantity of dried excrement reduced to powder, according as the plant appears more or less vigorous. During the great heats of summer, they water it morning and evening; but they moisten the leaves only in the morning: they also place small fragments

of brick round its root, to prevent the water from pressing down the earth too much.

PARTHENIUS, in geography, a mountain of Arcadia, where Telephus had a temple, and on which Atalantis was exposed. Paus. viii. 54. *Ælian* 13.

PARTHENON, Παρθενος, a virgin, in ancient architecture, the appellation given to the celebrated Grecian temple of Minerva, who was often herself designated Παρθενος, or virgin, and worshipped with the most profound adoration in the citadel of Athens. The temple thus called was built during the splendid era of Pericles; and the expenses of its erection were estimated at 6000 talents. It was built upon a spot elevated on all sides above the town and citadel; of the Doric order; constructed of Pentelican marble; and from its breadth (100 Greek feet) was denominated by the ancients Hecatompedon.

The Parthenon was 220 Greek feet in length, and about sixty-nine in height. Its portico was double at the two fronts, and single at the sides. On the exterior façade of the nave was represented a procession in honor of Minerva. The two architects employed by Pericles in the building of this superb and elegant edifice were Callicrates and Ictinus. This magnificent temple had resisted all the outrages of time; had been in turn converted into a Christian church and a Turkish mosque; but still subsisted entire when Spon and Wheeler visited Attica in 1676. It was in the year 1687 that the Venetians besieged the citadel of Athens under the command of General Kœnigsmarck. A bomb fell most unluckily on the devoted Parthenon, set fire to the powder which the Turks had shut up therein, and thus the roof was entirely destroyed, and the whole building almost reduced to ruin. The Venetian general, being afterwards desirous of carrying off the statue of Minerva which had adorned the pediment, had it removed, thereby assisting in the defacement of the place without any good result to himself—for the group fell to the ground and was shattered to pieces. Since this period every man of taste must have deplored the demolition of this noble structure, and the enlightened travellers who have visited the spot have successively published engravings of its remains. One of the first of these was Le Roy, in his *Ruins of Greece*; after him came Stuart, who, possessing greater pecuniary means, surpassed his predecessor in producing a beautiful and interesting work on the Athenian Antiquities. Chandler, and other travellers in Greece, have also described what came under their eye of the remains of the Parthenon, of which many models have likewise been executed. M. Cassas (says Millin) has a very fine one in his valuable cabinet of models of antique temples and other monuments. There is another in the Galerie d'Architecture au Palais des Arts, at Paris, &c. &c.

But, not content with these artistical labors and publications, more recent travellers have enriched their country and themselves with the actual spoils of the Parthenon. The foremost of these is our fellow-countryman lord Elgin, who, about the year 1800, removed a variety of the matchless friezes, statues, &c., which were pur-

chased of him by parliament on the part of the nation, and now form the most valuable and interesting portion of the British Museum. See **ELGIN MARBLES**. A part of his lordship's precious treasure was, however, to the regret of all lovers of the fine arts, lost in the passage to England.

PARTHIA, a celebrated empire of antiquity, bounded on the west by Media, north by Hyrcania, east by Aria, south by Carmania the desert; surrounded on every side by mountains, which still serve as a boundary, though its name is now changed to Eyrac or Irac; and, to distinguish it from Chaldea, to that of Irac Agemi. By Ptolemy it is divided into five districts, viz. Caminsine or Gamisene, Rarhyene, Choroane, Atticene, and Tabiene. The ancient geographers enumerate many cities in this country. Ptolemy reckons twenty-five large cities; and it certainly must have been very populous, since we have accounts of 2000 villages, besides a number of cities in this district being destroyed by earthquakes. Its capital was named Hecatompolis, from the circumstance of its having 100 gates. It was a noble and magnificent place; and, according to some, it still remains under the name of Ispahan, the capital of the present Persian empire.

Parthia is by some supposed to have been first peopled by the Phetri or Pathri, often mentioned in Scripture, and will have the Parthians to be descended from Pathrusim the son of Misraim. But however true this may be with regard to the ancient inhabitants, yet it is certain that those Parthians who were so famous in history descended from the Scythians, though from what tribe we are not informed. The history of the ancient Parthians is totally lost. *All we know is, that they were first subject to the Medes, afterwards to the Persians, and lastly to Alexander the Great. After his death the province fell to Seleucus Nicator, and was held by him and his successors till the reign of Antiochus Theos, about A. A. C. 250. At this time the Parthians revolted, and chose one Arsaces for their king. The immediate cause of this revolt was the lewdness of Agathocles, to whom Antiochus had committed the care of all the provinces beyond the Euphrates. This man made an infamous attempt on Tiridates, a youth of great beauty; which so enraged his brother Arsaces that he excited his countrymen to revolt; and, before Antiochus had leisure to attend to the rebellion, it became too powerful to be crushed. Seleucus Callinicus, the successor of Antiochus Theos, attempted to reduce Arsaces; but the latter, having had so much time to strengthen himself, defeated and drove him out of the country. Seleucus soon after undertook another expedition against Arsaces, but was still more unfortunate; being not only defeated in a great battle, but taken prisoner; and he died in captivity. The day on which Arsaces gained this victory was ever after observed among the Parthians as an extraordinary festival. Arsaces being thus fully established in his new kingdom, reduced Hyrcania and some other provinces under his power; and was at last killed in a battle against Ariarathes IV. king of Cappadocia.

Arsaces I. was succeeded by his son Arsaces
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II., who, entering Media, made himself master of that country, while Antiochus the Great was engaged in a war with Antiochus Euergetes king of Egypt. Antiochus, however, was no sooner disengaged from that war than he marched with all his forces against Arsaces, and at first drove him quite out of Media. But he soon returned with an army of 100,000 foot and 20,000 horse, with which he put a stop to the further progress of Antiochus; and a treaty was soon after concluded, in which it was agreed that Arsaces should remain master of Parthia and Hyrcania, upon condition of his assisting him in his wars with other nations. Arsaces II. was succeeded by his son Priapatus, who reigned fifteen years, and left three sons, Phrahates, Mithridates, and Artabanus. Phrahates, the eldest, succeeded to the throne, and reduced under his subjection the Mardi, who had never been conquered by any but Alexander the Great. After him, his brother Mithridates was invested with the regal dignity. He reduced the Bactrians, Medes, Persians, Elymeans, and over-ran all the east, penetrating beyond the boundaries of Alexander's conquests. Demetrius Nicator, who then reigned in Syria, endeavoured to recover these provinces, but his army was entirely destroyed, and himself taken prisoner, and kept captive till his death; after which Mithridates made himself master of Babylonia and Mesopotamia, so that he now commanded all the provinces between the Euphrates and the Ganges. Mithridates died in the thirty-seventh year of his reign, and left the throne to his son Phrahates II. who was scarcely settled in his kingdom when Antiochus Zidetes marched against him at the head of a numerous army, under pretence of delivering his brother Demetrius, who was still in captivity. Phrahates was defeated in three pitched battles; in consequence of which he lost all the countries conquered by his father, and was reduced within the limits of the ancient Parthian kingdom. Antiochus did not, however, long enjoy his good fortune; for his army, on account of their number, amounting to no fewer than 400,000, being obliged to separate to such distances as prevented them, in case of any sudden attack, from joining together, the inhabitants, whom they had most cruelly oppressed, taking advantage of this separation, conspired with the Parthians to destroy them. This was accordingly executed; and the vast army of Antiochus, with the monarch himself, were slaughtered in one day, scarcely a single person escaping to carry the news to Syria.

Elated with his success, Phrahates now proposed to invade Syria; but in the mean time, happening to quarrel with the Scythians, he was by them cut off with his whole army, and was succeeded by his uncle Artabanus; who enjoyed his dignity but a very short time, being, a few days after his accession, killed in another battle with the Scythians. He was succeeded by Pacorus I., who entered into an alliance with the Romans; and he by Phrahates III. This monarch took under his protection Tigranes the son of Tigranes the Great, king of Armenia, gave him his daughter in marriage, and invaded the kingdom with a design to place the son on the throne of Armenia; but, on the approach of

Pompey, he retired, and soon after renewed the treaty with the Romans. Phraates was murdered by his sons Mithridates and Orodes; and soon after the former was put to death by his brother, who thus became sole master of the Parthian empire. In his reign happened the memorable war with the Romans under Crassus. This was occasioned, not by any breach of treaty on the side of the Parthians, but through the shameful avarice of Crassus. The whole Roman empire had been divided between Cæsar, Pompey, and Crassus; and the eastern provinces had fallen to the lot of Crassus. No sooner was he invested with this dignity than he resolved to carry the war into Parthia, to enrich himself with the spoils of that people, who were then very wealthy. Some of the tribunes opposed him, as the Parthians had religiously observed the treaty; but Crassus having, by the assistance of Pompey, carried every thing before him, left Rome in the year 55 B. C., and pursued his march to Brundisium, where he immediately embarked his troops, though the wind blew very high; and after a difficult passage, where he lost many of his ships, he reached the ports of Galatia. From Galatia Crassus hastened to Syria, and, passing through Judea, plundered the temple at Jerusalem. He then marched with great expedition to the Euphrates, which he crossed on a bridge of boats; and, entering the Parthian dominions, began hostilities. As the enemy had not expected an invasion they were quite unprepared for resistance; and therefore Crassus overran all Mesopotamia; and, if he had taken advantage of the consternation which the Parthians were in, might have also reduced Babylonian. But instead of this, early in autumn, he repassed the Euphrates, leaving only 7000 foot and 1000 horse to garrison the places he had reduced; and, putting his army into winter quarters in Syria, gave himself totally up to his favorite passion of amassing money. Early in spring he drew his forces out of their winter quarters, in order to pursue the war with vigor; but, during the winter, Orodes had collected a very numerous army, and was well prepared to oppose him. Before he entered upon action, however, the Parthian monarch sent ambassadors to Crassus to expostulate with him on his injustice in attacking an ally of the Roman empire; but Crassus only returned for answer that 'they should have his answer at Seleucia.' Orodes, finding that a war was not to be avoided, divided his army into two bodies. One he commanded in person, and marched towards Armenia, in order to oppose the king of that country, who had raised a considerable army to assist the Romans. The other he sent into Mesopotamia, under Surenas, a most experienced general, by whose conduct all the cities which Crassus had reduced were quickly retaken. On this some Roman soldiers, who made their escape, and fled to the camp of Crassus, filled the minds of his army with terror at the accounts of the number, power, and strength of the enemy. They told their fellow-soldiers that the Parthians were very numerous, brave, and well disciplined; that it was impossible to overtake them when they fled, or escape when they pursued; that their defensive weapons were

proof against the Roman darts, and their offensive weapons so sharp that no buckler was proof against them, &c. Crassus looked upon all this only as the effects of cowardice; but the soldiers, and even many of the officers, were so disheartened, that Cassius, the same who afterwards conspired against Cæsar, and most of the legionary tribunes, advised Crassus to suspend his march, and consider better of the enterprise before he proceeded farther in it. But Crassus obstinately persisted in his former resolution, being encouraged by the arrival of Artabazus king of Armenia, who brought with him 6000 horse, and promised to send 10,000 cuirassiers and 30,000 foot whenever he should stand in need of them. At the same time he advised him not to march his army through the plains of Mesopotamia, but to take his route over the mountains of Armenia, as in every respect much safer. This salutary advice, however, was rejected, and Crassus entered Mesopotamia with an army of about 40,000 men. The Romans had no sooner crossed the Euphrates than Cassius advised Crassus to advance to some of those towns in which the garrisons yet remained, to halt and refresh his troops; or to march along the Euphrates to Seleucia; and thus to prevent the Parthians from surrounding him, at the same time that he would be plentifully supplied with provisions. Of this advice Crassus approved, but was dissuaded by Abgarus king of Edessa, whom the Romans took for an ally, but who was in reality a traitor sent by Surenas to bring about their destruction. Under this faithless guide the Romans entered a vast green plain divided by many rivulets. Their march proved at first very easy, but the farther they advanced the worse the roads became, inasmuch that they were at last obliged to climb up rocky mountains, which brought them to a dry and sandy plain, where they could neither find food nor water. Abgarus then began to be suspected by the tribunes and other officers, who earnestly intreated Crassus not to follow him any longer, but to retreat to the mountains; at the same time an express arrived from Artabazus, acquainting the Roman general that Orodes had invaded his dominions with a great army, and that he was obliged to keep his troops at home, to defend his own dominions. The same messenger advised Crassus to avoid by all means the barren plains, where his army would certainly perish with hunger and fatigue, and to approach Armenia, that they might join their forces against the common enemy. But Crassus, instead of hearkening either to the advice of the king or his own officers, first flew into a violent passion with the messengers of Artabazus, and then told his troops that they were not to expect the delights of Campania in the most remote parts of the world. Thus they continued their march across a desert, the very sight of which was sufficient to throw them into despair; for they could not perceive the least tree, plant, or brook, not so much as a single blade of grass; nothing all around them but huge heaps of burning sand. The Romans had scarcely got through this desert when word was brought them by their scouts that a numerous army of Parthians was advancing full speed to attack them; for Abgarus, under

pretence of going out on parties, had often conferred with Surenas, and concerted measures with him for destroying the Roman army. Upon this advice, which occasioned great confusion in the camp, the Romans being quite exhausted with their long march, Crassus drew up his men in battalia, following at first the advice of Cassius, who was for extending the infantry as wide as possible, that they might take up the more ground, and thus prevent the enemy from surrounding them; but, Abgarus assuring the proconsul that the Parthian forces were not so numerous as was represented, he changed this disposition, and drew up his troops in a square, which faced every way, and had on each side twelve cohorts in front. Near each cohort he placed a troop of horse to support them, that they might charge with the greater security and boldness. Thus the whole army looked more like one phalanx than troops drawn up in manipuli, with spaces between them, after the Roman manner. The general himself commanded in the centre, his son in the left wing, and Cassius in the right. In this order they advanced to the banks of the Balissus, the sight of which was very pleasing to the soldiers, who were much harassed with drought and heat. Most of the officers were for encamping on the banks of this river, to give the troops time to refresh themselves; but Crassus, hurried on by the inconsiderate ardor of his son, only allowed the legions to take a meal standing, and, before this could be done by all, he ordered them to advance, not slowly, and halting now and then after the Roman manner, but as fast as they could move, till they came in sight of the enemy, who, contrary to their expectation, did not appear either so numerous or so terrible as they had been represented; but this was a stratagem of Surenas, who had concealed his men in convenient places, ordering them to cover their arms, lest their brightness should betray them, and starting up at the first signal to attack the enemy on all sides. The stratagem had the desired effect; for Surenas no sooner gave the signal than the Parthians, rising as it were out of the ground with dreadful cries and a most frightful noise, advanced against the Romans, who were greatly surprised and dismayed at that sight; and much more so when the Parthians, throwing off the covering of their arms, appeared in shining cuirasses, and helmets of burnished steel, finely mounted on horses covered all over with armour of the same metal. At their head appeared young Surenas, in a rich dress, who was the first who charged the enemy, endeavouring with his pikemen to break through the first ranks of the Roman army; but finding it too close and impetenable, the cohorts supporting each other, he fell back, and retired in a seeming confusion; but the Romans were much surprised when they saw themselves suddenly surrounded on all sides, and galled with continual showers of arrows. Crassus ordered his light-armed foot and archers to advance, and charge the enemy; but they were soon repulsed, and forced to cover themselves behind the heavy armed foot. Then the Parthian horse, advancing near the Romans, discharged showers of arrows upon them, which

did great execution, the legionaries being drawn up in such close order that it was impossible for the enemy to miss their aim. As their arrows were of an extraordinary weight, and discharged with incredible force and impetuosity, nothing was proof against them. The two wings advanced in good order to repulse them, but to no effect; for the Parthians shot their arrows with as great dexterity when their backs were turned as when they faced the enemy; so that the Romans, whether they kept their ground or pursued the flying enemy, were equally annoyed with their fatal arrows. The Romans, as long as they had any hopes that the Parthians, after having spent their arrows, would either betake themselves to flight, or engage them hand to hand, stood their ground with great resolution and intrepidity; but when they observed that there were many camels in their rear loaded with arrows, and that those who emptied their quivers wheeled about to fill them anew, they began to lose courage, and to complain of their general for suffering them thus to stand still, and serve only as a butt to the enemy's arrows. Hereupon Crassus ordered his son to advance, and to attack the enemy with 1300 horse, 500 archers, and eight cohorts. But the Parthians no sooner saw this choice body (for it was the flower of the army) marching up against them, than they wheeled about, and betook themselves, according to their custom, to flight. Hereupon young Crassus, crying out, *They fly before us, pushed on full speed after them, not doubting but he should gain a complete victory*; but when he was at a great distance from the main body of the Roman army, he perceived his mistake; for those who before had fled, facing about, charged him with incredible fury. Young Crassus ordered his troops to halt, hoping that the enemy, upon seeing their small number, would not be afraid to come to a close fight: but herein he was likewise greatly disappointed; for the Parthians, contenting themselves to oppose his front with their heavy armed horse, surrounded him on all sides, and, keeping at a distance, discharged incessant showers of arrows upon the unfortunate Romans, thus surrounded and pent up. The Parthian cavalry, in wheeling about, raised so thick a dust that the Romans could scarcely see one another, far less the enemy. In a short time the place where they stood was covered with dead bodies. Some of the unhappy Romans finding their entrails torn, and many overcome by the exquisite torments they suffered, rolled themselves in the sand and expired. Others endeavouring to tear out by force the bearded points of the arrows, only increased their pain. Most of them died in this manner; and those who outlived their companions were no more in a condition to act; for when young Crassus exhorted them to march up to the enemy, some showed him their wounded bodies, others their hands nailed to their bucklers, and some their feet pierced through and pinned to the ground; so that it was equally impossible for them to attack the enemy or defend themselves. The young commander, therefore, leaving his infantry to the mercy of the enemy, advanced at the head of the cavalry against their heavy armed horse. The thousand Gauls whom he had brought with him

from the west charged the enemy with incredible boldness and vigor; but their lances did little execution on men armed with cuirasses, and horses covered with tried armour: however they behaved with great resolution; for some of them taking hold of the enemy's spears, and closing with them, threw them off their horses on the ground, where they lay without being able to stir by the great weight of their armor; others, dismounting, crept under the enemy's horses, and, thrusting their swords into their bellies, made them throw their riders. Thus the brave Gauls fought, though greatly harassed with heat and thirst, which they were not accustomed to bear, till most of their horses were killed, and their commander dangerously wounded. They then thought it advisable to retire to their infantry, which they no sooner joined than the Parthians invested them anew, making a most dreadful havoc of them with their arrows. In this desperate condition Crassus, spying a rising ground at a small distance, led the remains of his detachment thither, with a design to defend himself in the best manner he could, till succours should be sent him from his father. The Parthians pursued him; and, having surrounded him in his new post, continued showering arrows upon his men, till most of them were either killed or disabled, without being able to make use of their arms, or give the enemy proofs of their valor. Young Crassus had two Greeks with him, who had settled in the city of Carrhæ. These, touched with compassion at seeing so brave a man reduced to such straits, pressed him to retire with them to the city of Ischnes, which had declared for the Romans; but the young Roman rejected their proposal, saying that he would rather die a thousand times than abandon so many valiant men, who sacrificed their lives for his sake. He then embraced and dismissed them, giving them leave to retire and shift for themselves. As for himself, having now lost all hopes of being relieved, and seeing most of his men and friends killed around him, he gave way to his grief; and, not being able to make use of his arm, which was shot through with a large barbed arrow, he presented his side to one of his attendants, and ordered him to put an end to his unhappy life. His example was followed by Censorius a senator, by Megabaccus an experienced and brave officer, and by most of the nobility who served under him: 500 soldiers were taken prisoners, and the rest cut in pieces.

The Parthians, having thus cut off or taken the whole detachment commanded by young Crassus, marched without delay against his father, who, upon the first advice that the enemy fled before his son, and were closely pursued by him, had taken heart, the more because those who had remained to make head against him seemed to abate much of their ardor, the greater part of them having marched with the rest against his son. Wherefore, having encouraged his troops, he had retired to a small hill in his rear, to wait there till his son returned from the pursuit. Young Crassus had despatched frequent expresses to his father, to acquaint him with the danger he was in; but they had fallen into the enemy's hands, and been by them put to the sword:

only the last, who had escaped with great difficulty, arrived safe, and informed him that his son was lost if he did not send him an immediate and powerful reinforcement. This news threw Crassus into the utmost consternation; but the desire he had of saving his son and so many brave Romans who were under his command, made him immediately decamp, and march to their assistance. He was not gone far before he was met by the Parthians, who, with loud shouts, and songs of victory, gave, at a distance, the unhappy father notice of his misfortune. They had cut off young Crassus's head, and, having fixed it on the point of a lance, were advancing full speed to fall on the father. As they drew near Crassus was struck with the dismal sight, but behaved like a hero; for he had the presence of mind to stifle his grief, and to cry out to his dismayed troops, 'This misfortune is entirely mine; the loss of one man cannot affect the victory: Let us charge, let us fight like Romans: If you have any compassion for a father who has lost a son whose valor you admired, let it appear in your rage and resentment against these insulting barbarians.' Thus Crassus strove to reanimate his troops; but their courage was quite sunk, as appeared from the faint and languishing shout which they raised, according to custom, before the action. When the signal was given, the Parthians, keeping to their old way of fighting, discharged clouds of arrows on the legionaries, without drawing near them; which did such dreadful execution that many of the Romans, to avoid the arrows, which occasioned a long and painful death, threw themselves in despair on the enemy's heavily-armed horse, seeking from their spears a more speedy death. Thus the Parthians continued plying them incessantly with their arrows till night, when they left the field of battle, crying out that they would allow the father one night to lament the death of his son. This was a melancholy night for the Romans. Crassus kept himself concealed from the soldiers, lying not in the general's tent, but in the open air, and on the bare ground, with his head wrapped up in his military cloak; and was, in that forlorn condition, says Plutarch, a great example to the vulgar of the instability of fortune; to the wise, a still greater, of the pernicious effects of avarice, temerity, and ambition. Octavius, one of his lieutenants, and Cassius, endeavoured to raise him up and console him: but seeing him quite sunk under his affliction, and deaf to all comfort, they summoned a council of war, composed of all the chief officers; in which it was unanimously resolved that they should decamp before day-break, and retire to Carrhæ, which was held by a Roman garrison. Agreeably to this resolution they began to march as soon as the council broke up; which produced dreadful outcries among the sick and wounded, who, perceiving that they were to be abandoned to the mercy of the enemy, filled the camp with their complaints and lamentations: but their cries did not stop the march of the others, which indeed was very slow to give the stragglers time to come up. There were only 300 light horse, under the command of one Ægnatius, who pursued their march

without stopping. These arriving at Carrhæ about midnight, *Ægnatius* calling to the sentinels on the walls, desired them to acquaint *Coponius*, governor of the place, that *Crassus* had fought a great battle with the Parthians; and, without letting them know who he was, continued his march to the bridge of Zeugma, which he passed, and thus saved his troops; but was much blamed for abandoning his general. However, the message he sent to *Coponius* was of some temporary service to *Crassus*; for that commander, wisely conjecturing, from the manner in which the unknown person had given him that intelligence, that some misfortune had befallen *Crassus*, immediately ordered his garrison to stand to their arms, and, marching out, met *Crassus*, and conducted him and his army to the city; for the Parthians, though informed of his flight, did not offer to pursue him; but when it was day they entered the Roman camp, and having put all the wounded, to the number of 4000, to the sword, dispersed their cavalry all over the plain, in pursuit of the fugitives. One of *Crassus's* lieutenants, named *Vargunteius*, having separated in the night from the main body of the army, with four cohorts, missed his way, and was overtaken by the enemy; at whose approach he withdrew to a neighbouring hill, where he defended himself with great valor, till all his men were killed except twenty, who made their way through the enemy, sword in hand, and got safe to Carrhæ: but *Vargunteius* himself was killed. In the mean time *Surenas*, not knowing whether *Crassus* and *Cassius* had retired to Carrhæ, or chosen a different route, in order to be informed of the truth, despatched a messenger, who spoke the Roman language, to the city of Carrhæ, enjoining him to approach the walls, and acquaint *Crassus* himself, or *Cassius*, that the Parthian general was inclined to enter into a treaty with them, and demanded a conference. Both the proconsul and his quæstor *Cassius* spoke from the walls with the messenger; and, accepting the proposal with great joy, desired that the time and place for an interview might be immediately agreed upon. The messenger withdrew, promising to return quickly with an answer from *Surenas*: but that general no sooner understood that *Crassus* and *Cassius* were in Carrhæ, than he marched thither with his whole army; and, having invested the place, acquainted the Romans that, if they expected any favorable terms, they must deliver up *Crassus* and *Cassius* to him in chains. Hereupon, a council of the chief officers being summoned, it was thought expedient to retire from Carrhæ that very night, and seek for another asylum. It was of the utmost importance that none of the inhabitants of Carrhæ should be acquainted with their design till its execution; but *Crassus*, whose conduct was infatuated, imparted the whole matter in confidence to one *Andromachus*, choosing him for his guide, and relying on the fidelity of a man whom he scarcely knew. *Andromachus* immediately acquainted *Surenas* with the design of the Romans; promising at the same time, as the Parthians did not engage in the night, to manage matters so that they should not get out of his reach before day-break. Pursuant to

his promise, he led them through many windings and turnings till he brought them into deep marshy grounds, where the infantry were up to the knees in mire. Then *Cassius*, suspecting that their guide had led them into those bogs with no good design, refused to follow him any longer; and, returning to Carrhæ, took his route towards Syria, which he reached with 500 horse. *Octavius*, with 5000 men under his command, being conducted by trusty guides, gained the mountains called by *Plutarch* and *Appian* *Sinnaci*, and there intrenched himself before break of day. As for *Crassus*, he was still entangled in the marshes, when *Surenas*, at the rising of the sun, overtook him and invested him with his cavalry. The proconsul had with him four cohorts, and a small body of horse; and with these he gained, in spite of all opposition, the summit of another hill within twelve furlongs of *Octavius*; who, seeing the danger that threatened his general, flew to his assistance, first with a small number of his men, but was soon followed by all the rest, who quitted their post, though very safe, and, charging the Parthians with great fury, disengaged *Crassus*, and obliged the enemy to abandon the hill. Upon the retreat of the enemy, they formed themselves into a hollow square; and, placing *Crassus* in the middle, made a kind of rampart round him with their bucklers, resolutely protesting, that none of the enemy's arrows should touch their general's body till they were all killed fighting in his defence. *Surenas*, loth to let so fine a prey escape, surrounded the hill, as if he designed to make a new attack: but finding his Parthians very backward, and not doubting but the Romans, when night came on, would pursue their march, and get out of his reach, he had recourse again to artifice; and declared before some prisoners, whom he soon after set at liberty, that he was inclined to treat with the proconsul of a peace; and that it was better to come to reconciliation with Rome, than to sow the seed of an eternal war, by shedding the blood of one of her generals. Agreeably to this declaration, *Surenas* advanced towards the hill where the Romans were posted, attended only by some of his officers, and, with his bow unbent, and open arms, invited *Crassus* to an interview. So sudden a change seemed very suspicious to the proconsul; who therefore declined the interview, till he was forced, by his own soldiers, to entrust his life with an enemy whose treachery they had all experienced; for the legionaries, flocking round him, not only abused him in an outrageous manner, but even menaced him if he did not accept of the proposals made him by the Parthian general. Seeing, therefore, that his troops were ready to mutiny, he began to advance without arms or guards, towards the enemy, after having called the gods and his officers to witness the violence his troops offered him; and entreated all who were present, but especially *Octavius* and *Petronius*, two of the chief commanders, for the honor of Rome, their common mother, not to mention, after his death, the shameful behaviour of the Roman legionaries. *Octavius* and *Petronius* could not resolve to let him go alone; but attended him down the hill, as did likewise some legionaries, keeping at a

distance. Crassus was met at the foot of the hill by two Greeks; who, dismounting from their horses, saluted him with great respect; and desired him, in the Greek tongue, to send some of his attendants, who might satisfy him, that Surenas, and those who were with him, came without arms. Hereupon Crassus sent two brothers of the Rœscian family; but Surenas, having caused them to be seized, advanced to the foot of the hill, mounted on a fine horse, and attended by the chief officers of the army. Crassus, who waited for the return of his two messengers, was surprised to see himself prevented by Surenas in person, when he least expected it. The Parthian general, perceiving, as he approached Crassus, that he was on foot, cried out in a seeming surprise, 'What do I see? a Roman general on foot, and we on horseback! Let a horse be brought for him immediately. You need not be surprised,' replied Crassus, 'we are come only to an interview, each after the custom of his country.' 'Very well,' answered Surenas, 'there shall be henceforth a lasting peace between king Orodes and the people of Rome: but we must sign the articles of it on the banks of the Euphrates; for you Romans do not always remember your conventions.' Crassus would have sent for a horse: but a very stately one, with a golden bit, and richly caparisoned, was brought to him by a Parthian; which Surenas presenting to him, 'Accept this horse from my hands,' said he, 'which I give you in the name of my master king Orodes.' He had scarce uttered these words, when some of the king's officers, taking Crassus by the middle, set him upon the horse, which they began to whip with great violence before them in order to make him quicken his pace. Octavius, offended at this insult, took the horse by the bridle; Petronius, and the few Romans who were present, seconded him, and flocking all around Crassus stopped his horse. The Parthians endeavoured to repulse them, and clear the way for the consul; whereupon they began to jostle and push one another with great tumult and disorder. At last, Octavius, drawing his sword, killed one of the king's grooms; but at the same time another, coming behind Octavius with a blow laid him dead at his feet. Both parties fought with great resolution, the Parthians striving to carry off Crassus, and the Romans to rescue him out of their hands. In this scuffle most of the Romans who came to the conference were killed; and among the rest Crassus himself, but whether by a Roman or a Parthian is uncertain. Upon his death, the rest of the army either surrendered to the enemy, or, dispersing in the night, were pursued, and put to the sword. The Romans lost in this campaign at least 30,000 men; of whom 20,000 were killed, and 10,000 taken prisoners.

When the battle of Carrhæ was fought, king Orodes was in Armenia, where he had made peace with Artabazus. While the two kings were solemnising their new alliance with expensive and public feasts, Syllaces, a Parthian officer, whom Surenas had sent with the news of his late victory, and the head of Crassus as a proof of it, arrived in the capital of Armenia. The transports of joy which Orodes felt at this sight, and

these news are not to be expressed; and the lords of both kingdoms, who attended their sovereigns, raised loud and repeated shouts of joy. Syllaces was ordered to give a more particular and distinct account of that memorable action; which when he had done, Orodes commanded melted gold to be poured into Crassus's mouth; reproaching him thereby with avarice, which had been always his predominant passion. Surenas did not long enjoy the pleasure of his victory; for Orodes, jealous of his power and authority among the Parthians, soon after caused him to be put to death. Pacorus, the king's favorite son, was put at the head of the army; and, agreeably to his father's directions, invaded Syria; but he was driven out with great loss by Cicero and Cassius, the only general who survived the death of Crassus. After this we find no mention of the Parthians, till the time of the civil war between Cæsar and Pompey, when the latter sent ambassadors to solicit succor against his rival. This Orodes was willing to grant, upon condition that Syria was delivered up to him; but, as Pompey would not consent to such a proposal, the succors were not only denied, but, after the battle of Pharsalia, he put Lucius Hirtius in irons, whom Pompey had again sent to ask assistance, or at least to desire leave to shelter himself in the Parthian dominions. Cæsar is said to have meditated a war against the Parthians, which in all probability would have proved fatal to them. His death delivered them from this danger. But, not long after, the eastern provinces, being grievously oppressed by Marc Antony, rose up in arms; and, having killed the tax-gatherers, invited the Parthians to join them, and drive out the Romans. They very readily accepted the invitation, and crossed the Euphrates with a powerful army, under the command of Pacorus, and Labienus a Roman general of Pompey's party. At first they met with great success, over-ran all Asia Minor, and reduced all the countries as far as the Hellespont and Ægean Sea, subduing likewise Phœnicia, Syria, and even Judea. They did not, however, long enjoy their new conquests: for being elated with their victories, and despising the enemy, they engaged Ventidius, Antony's lieutenant, before Labienus had time to join them, and were utterly defeated. This so disheartened Labienus's army that they all abandoned him; and he himself, being thus obliged to wander from place to place in disguise, was at last taken and put to death at Cyprus. Ventidius, pursuing his advantage, gained several other victories; and at last entirely defeated the Parthian army under Pacorus, cutting almost the whole of them in pieces, and the prince himself among the rest. He did not, however, pursue this last victory as he might have done; being afraid of giving umbrage to Antony, who had already become jealous of the great honor gained by his lieutenant. He therefore contented himself with reducing those places in Syria and Phœnicia which the Parthians had taken in the beginning of the war, until Antony arrived to take the command of the army upon himself. Orodes was almost distracted with grief, on receiving the dreadful news of the loss of his army and the death of his favorite

son. However, when time had restored the use of his faculties, he appointed Phrahates, the eldest, but the most wicked, of all his children, to succeed him in the kingdom, admitting him at the same time to a share of the sovereign authority with himself. The consequence of this was, that Phrahates very soon attempted to poison his father with hemlock. But this, contrary to expectation, proving a cure for the dropsy, which an excess of grief had brought upon the king, the unnatural son had him stifled in bed; and soon after not only murdered all his own brethren, who were thirty in number, but cut off all the rest of the royal family, not sparing even his own eldest son, lest the discontented Parthians should place him, as he was already of age, on the throne.

Many of the chief lords of Parthia, being intimidated by the cruelty of Phrahates, retired into foreign countries; and among these was one Moneses, a person of great distinction, as well as skill and experience in war. This man, having fled to Antony, soon gained his confidence, and was by him easily prevailed upon to engage in a war against his countrymen. But Phrahates, justly dreading the consequences of such a person's defection, sent a solemn embassy to invite him home on such terms as he should think fit to accept: which greatly provoked Antony; though he did not hinder him from returning, lest others should thereby be discouraged from coming over to him. He therefore dismissed him with great civility, sending ambassadors at the same time to Phrahates to treat of a peace. Thus he hoped to divert the Parthian monarch's attention from making the necessary preparations for war, and that he should be able to fall upon him in the spring when he was in no condition to make resistance. But herein he was greatly disappointed; for on his arrival at the Euphrates, which he intended to pass, and enter the Parthian dominions on that side, he found all the passes so well guarded that he thought proper to enter Media, with a design first to reduce that country, and then to enter Parthia. This plan had been suggested to him by Artabazus king of Armenia, who in the end betrayed him; for instead of conducting the army the straight way from Zeugma on the Euphrates to the Araxes, which parted Media from Armenia, and which was about 500 miles distant from the place whence he first set out, Artabazus led them over rocks and mountains so far about that the army marched above 1000 miles before they reached the borders of Media, where they intended to begin the war. Thus they were not only greatly fatigued, but had not sufficient time, the year being far spent, to put in execution the design on which they had come. However, as Antony was impatient to get back to Cleopatra, he left behind him most of the baggage of the army, and 300 waggons loaded with battering rams and other military engines for sieges; appointing Statianus, one of his lieutenants, with a body of 10,000 men, to guard them, and to bring them, by slower marches, after the army. With the rest of the forces he marched more than 300 miles before the rest, without allowing his men any respite till he arrived at Praaspa or Phrahata, the ca-

pital of Media, which he immediately invested. But the Parthians, well knowing that he could not make any progress without his military machines, passed by his army, in order to attack Statianus: which they did with such success that the body commanded by him were all to a man cut off, and all their military engines taken, among which was a battering ram eighty feet long. Antony, notwithstanding this disaster, continued the siege of Praaspa; but was daily harassed by sallies of the garrison from within, and the enemy's army without. At last he began to think of a retreat, when his provisions were almost exhausted, finding it impossible to become master of the city. But, as he was to march 300 miles through the enemy's country, he thought proper first to send ambassadors to the Parthian monarch, acquainting him that the Romans were willing to allow him a peace, provided he would restore the standards and prisoners taken at Carrhæ. Phrahates received the ambassadors, sitting on a golden throne; and, after having bitterly inveighed against the avarice and unbounded ambition of the Romans, told them that he would not part with the standards and prisoners; but, that if Antony would immediately raise the siege of Praaspa, he would suffer him to retire unmolested. Antony, who was reduced to great straits, no sooner received this answer than he broke up the siege, and marched towards Armenia. However, Phrahates was not so good as his word; for the Romans were attacked by the enemy no fewer than eighteen times on their march, and were thrice in the utmost danger of being cut off. A famine also raged in the Roman army; upon which they began to desert to the enemy; and indeed Antony would probably have been left by himself, had not the Parthians, in a very cruel as well as impolitic manner, murdered all those who fled to them in sight of the rest. At last, after having lost 32,000 men, and being reduced to such despair that he was with difficulty prevented from laying violent hands on himself, he reached the river Araxes; when his men, finding themselves out of the reach of the enemy, fell on the ground, and kissed it with tears of joy.

Antony was no sooner gone than the kings of Media and Parthia quarrelled about the booty they had taken; and, after various contests, Phrahates reduced all Media and Armenia. After this, being elated with his conquests, he oppressed his subjects in such a cruel and tyrannical manner that a civil war took place; in which the competitors were alternately driven out and restored, till A. D. 50, when one Vologeses, the son of Gortazes, a former king, became peaceable possessor of the throne. He carried on some wars with the Romans, but with very indifferent success, and at last gladly consented to a renewal of the ancient treaties with that powerful people. From this time the Parthian history affords nothing remarkable till the reign of the emperor Trajan; when the Parthian king, Cosroes, infringed the treaty with Rome, by driving out the king of Armenia. Upon this Trajan, who was glad of any pretence to quarrel with the Parthians, immediately hastened into Armenia. His arrival there was so sudden and unexpected that

he reduced almost the whole country without opposition; and took prisoner Parthamasiris, the king whom the Parthians had set up. After this he entered Mesopotamia, took the city of Nisibis, and reduced to a Roman province the whole of that wealthy country. Early in the spring of the following year, Trajan, who had kept his winter quarters in Syria, took the field again but was warmly opposed by Cosroes. He found him encamped on the banks of the Euphrates, with a design to dispute his passage; which he did with such vigor that the emperor, after having several times attempted to ford that river, and been always repulsed with great slaughter, was obliged to cause boats to be built on the neighbouring mountains, which he privately conveyed from thence on carriages to the water side; and having, in the night time, formed a bridge with them, he passed his army the next day; but not without great loss and danger, the Parthians harassing his men the whole time with incessant showers of arrows, which did great execution. Having gained the opposite bank, he advanced boldly into Assyria, the Parthians flying every where before him, and made himself master of Arbela. Thence he pursued his march; subduing, with incredible rapidity, countries where the Roman standard had never been displayed before. Babylonia voluntarily submitted to him. The city of Babylon was, after a vigorous resistance, taken by storm; by which means he became master of all Chaldea and Assyria, the two richest provinces of the Parthian empire. From Babylon he marched to Ctesiphon, the metropolis of the Parthian monarchy; which he besieged and at last reduced. But as to the particulars of these great conquests we are quite in the dark: this expedition, however glorious to the Roman name, being rather hinted at than described, by the writers of those times.

While Trajan was thus making war in the heart of the enemy's country, Cosroes, having recruited his army, marched into Mesopotamia, with a design to recover that country, and cut off all communication between the Roman army and Syria. On his arrival in that province the inhabitants flocked to him from all parts; and most of the cities, driving out the garrisons left by Trajan, opened their gates to him. Hereupon the emperor detached Lucius and Maximus, two of his chief commanders, into Mesopotamia, to keep such cities in awe as had not revolted, and to open a communication with Syria. Maximus was met by Cosroes; and, having ventured a battle, his army was entirely defeated, and himself killed. But Lucius being joined by Euricius and Clarius, two other commanders sent by Trajan with fresh supplies, gained considerable advantages over the enemy, and retook the cities of Nisibis and Seleucia, which had revolted. And now Trajan seeing himself possessed of all the best and most fruitful provinces of the Parthian empire, but at the same time being well apprised that he could not without a vast expense maintain his conquests, nor keep in subjection so fierce and warlike a people, at such a distance from Italy, resolved to set over them a king of his own choosing, who should hold the crown of him and his successors, and acknowledge them

as his lords and sovereigns. With this view he repaired to Ctesiphon; and, having there assembled the chief men of the nation, he crowned one of the royal family, named Parthaspates, king of Parthia, obliging all who were present to pay him their allegiance. He chose Parthaspates, because that prince had joined him at his first entering the Parthian dominions, conducted himself with great fidelity, and shown on all occasions an extraordinary attachment to the Romans. Thus the Parthians were at last subdued, and their kingdom made tributary to Rome.

The Parthians did not long continue in this state of subjection: for they no sooner heard of Trajan's death, than, taking up arms, they drove Parthaspates from the throne; and recalling Cosroes, who had retired into the country of the Hyrcanians, openly revolted from Rome. Adrian, who was then commander-in-chief of all the forces in the east, and soon after acknowledged emperor by the army, did not care, though he was at that time in Syria with a numerous army, to engage in a new war with the Parthians; but contented himself with preserving the ancient limits of the empire, without any ambitious prospects of further conquests. Therefore, in the beginning of his reign, he abandoned those provinces beyond the Euphrates which Trajan had conquered; withdrew the Roman garrisons from Mesopotamia; and, for the greater safety of other places, made the Euphrates the boundary of and barrier in those parts, posting his legions along the banks of the river. Cosroes died after a long reign, and was succeeded by his eldest son Vologeses II.: in whose reign the Alani breaking into Media, then subject to the Parthians, committed there great devastations; but were prevailed upon, with rich presents sent them by Vologeses, to abandon that kingdom, and return home. Upon their retreat, Vologeses, having no enemy to contend with at home, fell unexpectedly upon Armenia; surprised the legions there; and, having cut them all in pieces to a man, entered Syria; defeated with great slaughter Atilius Cornelianus, governor of that province; and advanced without opposition to the neighbourhood of Antioch; putting every where the Romans and those who favored them to the sword. Hereupon the emperor Verus, by the advice of his colleague Antoninus surnamed the philosopher, leaving Rome, hastened into Syria; and, having driven the Parthians out of that province, ordered Statius Priscus to invade Armenia, and Cassius, and Martius Verus, to enter the Parthian territories, and carry the war into the enemy's country. Priscus made himself master of Artaxata; and in one campaign drove the Parthians, though not without great loss on his side, quite out of Armenia. Cassius, on the other hand, having in several encounters defeated Vologeses, though he had an army of 400,000 men under his command, reduced, in four years time, all those provinces which had formerly submitted to Trajan, took Seleucia, burnt and plundered the famous cities of Babylon and Ctesiphon, with the stately palaces of the Parthian monarchs, and struck terror into the most remote provinces of that great empire. On his return, he lost above half the number of

his forces by sickness and famine; so that, after all, the Romans, as Spartianus observes, had no great reason to boast of their victories and conquests.

Verus, however, who had never stirred during the whole time of the war from Antioch and Daphne, took upon him the lofty titles of Parthicus and Armenicus, as if he had acquired them in the midst of his pleasures and debaucheries. After the revolt and death of Cassius, Antoninus the Philosopher repaired into Syria to settle the affairs of that province. On his arrival there, he was met by ambassadors from Vologeses; who, having recovered most of the provinces subdued by Cassius, and being unwilling either to part with them or engage in a new war, solicited the emperor to confirm him in the possession of them, promising to hold them of him, and to acknowledge the sovereignty of Rome. To these terms Antoninus readily agreed, and a peace was accordingly concluded between the two empires; which Vologeses did not long enjoy, being soon after carried off by a distemper, and not murdered by his own subjects, as we read in Constantinus Manasses, who calls him Beleges. Upon his death, Vologeses III., the son of his brother Sanatruces, and grandson of Cosroes, was raised to the throne. He sided with Niger against the emperor Severus: who, thereupon having settled matters at home, marched with all his forces against him; and advancing to the city of Ctesiphon, whither he had retired, laid close siege to that metropolis. Vologeses made a most gallant defence; but the city, after a long siege, and much bloodshed on both sides, was at length taken by assault. The king's treasures, with his wives and children, fell into the emperor's hands: but Vologeses himself had the good luck to make his escape; which was a great disappointment to Severus, who immediately despatched an express to acquaint the senate with the success that had attended him in his expedition against the only nation that was then so formidable to Rome.

He had no sooner crossed the Euphrates than Vologeses recovered all the provinces, except Mesopotamia, which he had reduced. These expeditions were chargeable to the Romans, and cost them much blood, without reaping any advantages from them; for, as they had not sufficient forces to keep in awe the provinces they had subdued, the inhabitants, greatly attached to the family of Arsaces, never failed to return to their ancient obedience as soon as the Roman armies were withdrawn. Vologeses was soon after engaged in a war still more troublesome and destructive, with his brother Artabanus, who, encouraged by some of the discontented nobles, attempted to rob him of the crown, and place it on his own head. Vologeses gained several victories over his brother and rebellious subjects; but died before he could restore the empire to its former tranquillity. Artabanus, who had a numerous army at his devotion, did not meet with any opposition in seizing the throne, vacant by the death of his brother, though Tiridates had a better title to it, as being his eldest brother. He had scarce settled the affairs of the kingdom, when the emperor Caracalla, desirous to signalise himself, as several

of his predecessors had done, by some memorable exploit against the Parthians, sent a solemn embassy to him, desiring his daughter in marriage. Artabanus, overjoyed at this proposal, which he thought would be attended with a lasting peace between the two empires, received the ambassadors with all possible marks of honor, and readily complied with their request. Soon after Caracalla sent a second embassy to acquaint the king that he was coming to solemnise the nuptials; whereupon Artabanus went to meet him, attended by the chief of his nobility and his best troops, all unarmed and in most pompous habits: but this peaceable train no sooner approached the Roman army than the soldiers, on a signal given them, falling upon the king's retinue, made a most terrible slaughter of the unarmed multitude, Artabanus himself escaping with great difficulty. The treacherous Caracalla, having gained by this exploit great booty, and, as he thought, no less glory, wrote a long and boasting letter to the senate; and assumed the title of Parthicus, for this piece of treachery, as he had before that of Germanicus, for murdering, in like manner, some of the German nobility. Artabanus, resolving to make the Romans pay dear for their inhuman and barbarous treachery, raised the most numerous army that had ever been known in Parthia, crossed the Euphrates, and entered Syria, putting all to fire and sword. But, Caracalla being murdered before this invasion, Macrinus, who had succeeded him, met the Parthians at the head of a mighty army, composed of many legions, and all the auxiliaries of the states of Asia. The two armies no sooner came in sight of each other than they engaged with the utmost fury. The battle continued two days, both the Romans and Parthians fighting so obstinately that night only parted them, without any apparent advantage on either side; though both retired, when night had put an end to the contest, crying, Victory! Victory! The field of battle was covered all over with dead bodies, there being already above 40,000 killed, including both Romans and Parthians: nevertheless Artabanus was heard to say that the battle was only begun, and that he would continue it till either the Parthians or Romans were all to a man cut in pieces. But Macrinus, being well apprised that the king came highly enraged against Caracalla in particular, and dreading the consequences which would attend the destruction of his army, sent a herald to Artabanus, acquainting him with the death of Caracalla, and proposing an alliance between the two empires. The king, understanding that his great enemy was dead, readily embraced the proposals of peace and amity, upon condition that all the prisoners who had been taken by the treachery of Caracalla should be immediately restored, and a large sum of money paid him to defray the expenses of the war. These being performed, without delay, Artabanus returned into Parthia, and Macrinus to Antioch. As Artabanus lost on this occasion the flower of his army, Artaxerxes, a Persian of mean descent, but of great courage and experience in war, revolting from the Parthians, prevailed on his countrymen to join him and attempt the recovery

of the sovereign power, of which he said they had been unjustly deprived, first by the Macedonians and afterwards by the Parthians their vassals. Artabanus, upon the news of this revolt, marched with the whole strength of his kingdom to suppress it; but being met by Artaxerxes, at the head of a no less powerful army, a bloody battle ensued, which is said to have lasted three days. At length the Parthians, though they behaved with the utmost bravery and fought like men in despair, were forced to yield to the Persians, who were commanded by a more experienced leader. Most of their troops were cut off in the flight; and the king himself was taken prisoner, and soon after put to death by Artaxerxes's order. The Parthians, having lost in this fatal engagement both their king and their army, were forced to submit to the conqueror, and become vassals to a nation which had been subject to them for 475 years.

PARTHICUS, a title absurdly assumed by the emperors Verus and Caracalla, upon their pretended conquest of Parthia. See **PARTHIA**.

PARTI, **PARTIE**, **PARTY**, or **PARTED**, in heraldry, is applied to a shield or escutcheon, denoting it divided or marked out into partitions. Thus,

1. **PARTI PER BEND DEXTER** is when the division comes from the upper corner of the shield on the right hand, and descends obliquely to the opposite lower corner.

2. **PARTI PER BEND SINISTER** is when the division, coming from the upper left corner, descends across to the opposite lower one.

3. **PARTI PER FESS** is when the division is across the middle from side to side.

4. **PARTI PER PALE** is when the shield is divided perpendicularly into two halves. All these partitions, according to M. de la Colom-biere, have their origin from the cuts and bruises that have appeared on shields after engagements; and, being proofs of the dangers to which the bearers had been exposed, they were transmitted to posterity, and became arms and marks of honor to their future families. See **HERALDRY**.

PARTIAL, *adj.* } Fr. *partial*. Inclined to
PARTIAL'ITY, *n. s.* } one part or party; dis-
PARTIALIZE, *v. a.* } posed to favor without
PARTIALLY, *adv.* } reason; affecting one part;
not total or general: partiality is, bias of judgment to one side; prejudice in favor of a party: to partialize (used by Shakespeare, after the Fr. *partialiser*) is, to make partial: partially follows the senses of partial.

Ye have not kept my ways, but have been *partial* in the law. *Malachi* ii. 9.

Then would the Irish party cry out *partiality*, and complain he is not used as a subject, he is not suffered to have the free benefit of the law. *Spenser*.

Such neighbour-ness to our sacred blood

Should nothing privilege him, nor *partialize*

The' unstooping firmness of my upright soul.

Shakespeare.

That stole into a total verity, which was but *partially* true in its covert sense. *Browne*.

Self-love will make men *partial* to themselves and friends, and ill-nature, passion, and revenge, will carry them too far in punishing others; and hence God hath appointed governments to restrain the *partiality* and violence of men *Locke*.

Thus Kings heretofore who showed themselves *partial* to a party, had the service only of the worst part of their people. *Davenant*.

If we compare these *partial* dissolutions of the earth, with an universal dissolution, we may as easily conceive an universal deluge from an universal dissolution, as a *partial* deluge from a *partial*.

Burnet's Theory.

That which weakens religion, will at length destroy it; for the weakening of a thing is only a *partial* destruction of it. *South*.

Partiality is properly the understanding's judging according to the inclination of the will and affections, and not according to the exact truth of things, or the merits of the cause. *Id. Sermons.*

The message he brought opened a clear prospect of eternal salvation, which had been but obscurely and *partially* figured in the shadows of the law.

Rogers.

Authors are *partial* to their wit, 'tis true, But are not crickus to their judgment too?

Pope.

All discord, harmony, not understood;

All *partial* evil, universal good. *Id.*

Nor any *partial*, private end,

Such reverence to the public bears;

Nor any passion, Virtue's friend,

So like the virtue's self appears. *Athenis.*

PARTICIPABLE, *adj.*

PARTICIPANT, *n. s.*

PARTICIPATE, *v. n. & v. a.*

PARTICIPATION.

Fr. *participer*;
Latin, *participo*.
Divisible; such as may be shared:

participant is, having a share or part of: participate, to partake; have share; have part of more things than one; have a reciprocated part; taking of, in, and with: as an active verb, to partake; share; receive part of: participation is, the act or state of participating: also (in an obsolete sense) division or distribution into parts.

As Christ's incarnation and passion can be available to no man's good, which is not made partaker of Christ, neither can we *participate* him without his presence. *Hooker*.

Civil society doth more content the nature of man, than any private kind of solitary living; because, in society, this good of mutual *participation* is so much larger. *Id.*

The' other instruments

Did see, and hear, devise, instruct, walk, feel;

And mutually *participate*. *Shakespeare.*

Their spirits are so married in conjunction, with the *participation* of society, that they flock together in consent, like so many wild geese. *Id.*

It sufficeth not, that the country hath wherewith to sustain even more than live upon it, if means be wanting whereby to drive convenient *participation* of the general store into a great number of well-servers. *Raleigh*.

The French seldom atchieved any honourable acts without Scottish hands, who therefore are to *participate* the glory with them. *Camden*.

During the parliament, he published his proclamation, offering pardon to all such as had taken arms, or been *participant* of any attempts against him; so as they submitted themselves. *Bacon*.

The species of audibles seem to *participate* more with local motion, like percussions made upon the air. *Id.*

Few creatures *participate* of the nature of plants and metals both. *Id.*

A joint coronation of himself and his queen might give any countenance of *participation* of title. *Id.*

An aged citizen brought forth all his provisions,

and said, that as he did communicate unto them his store, so would he *participate* of their wants.

Hayward.

The prince saw he should confer with one *participate* of more than monkish speculations. *Wotton.*

God, when heaven and earth he did create,
Formed man, who should of both *participate*.

Denham.

His delivery, and thy joy thereon,

In both which we, as next, *participate*.

Milton.

Fellowship,

Such as I seek, fit to *participate*

All rational delight! wherein the brute

Cannot be human consort.

Id.

If any part of my body be so mortified, as it becomes like a rotten branch of a tree, it putrefies, and is not *participate* of influence derived from my soul, because it is now no longer in it to quicken it.

Hale.

Those deities are so by *participation*, and subordinate to the supreme.

Stillington.

Those bodies, which are under a light, which is extended and distributed equally through all, should *participate* of each others' colours.

Dryden.

Plato, by his ideas, means only the divine essence with this connotation, as it is variously imitable or *participable* by created beings.

Norris's Miscellanies.

What an honour, that God should admit us into such a blessed *participation* of himself!

Atterbury.

Convince them that brutes have the least *participation* of thought, and they retract.

Bentley.

Your genius should mount above that mist, in which its *participation* and neighbourhood with earth long involved it.

Pope.

PARTICIPLE, n. s. } Lat. *participium*. A
PARTICIPIAL, *adj.* } word partaking of the
PARTICIPIALITY, *adv.* } qualities both of a noun
and verb: participial, and participially, corresponding.

The *participles* or confiners between plants and living creatures, are such as are fixed, though they have a motion in their parts: such as oysters and cockles.

Bacon.

A *participle* is a particular sort of adjective, formed from a verb, and, together with its signification of action, passion, or some other manner of existence, signifying the time thereof.

Clarke.

As the perfect *participle*, and the imperfect tense, are sometimes different in their form, care must be taken that they be not indiscriminately used.

Murray.

PARTICLE, n. s. Lat. *particula*. A diminutive of part; an indivisible part; hence a word unvaried by inflexions.

Till Arianism had made it a matter of sharpness and subtlety of wit to be a sound believing Christian, men were not curious what syllables or *particles* of speech they used.

Hooker.

From any of the other unreasonable demands, the houses had not given their commissioners authority in the least *particle* to recede.

Clarendon.

With *particles* of heavenly fire,

The God of nature did his soul inspire.

Dryden.

There is not one grain in the universe, either too much or too little, nothing to be added, nothing to be spared: nor so much as any one *particle* of it, that mankind may not be either the better or the worse for, according as 'tis applied.

L'Estrange.

In the Hebrew tongue there is a *particle* consisting but of one single letter, of which there are reckoned up above fifty several significations.

Locke.

Particles are the words whereby the mind signifies what connection it gives to the several affirmations and negations that it unites in one continued reasoning or narration.

Id.

It is not impossible but that microscopes may at length be improved to the discovery of the *particles* of bodies, on which their colours depend.

Newton's Opticks.

Curious wits,

With rapture, with astonishment, reflect

On the small size of atoms, which unite

To make the smallest *particle* of light.

Blackmore.

Blest with more *particles* of heavenly flame.

Granville.

A **PARTICLE**, in physiology, is the minute part of a body, an assemblage of which constitutes all natural bodies. Particle is often used in the same sense as atom in the ancient Epicurean philosophy. Some writers, however, distinguish them; making particle an assemblage or composition of two or more primitive and physically indivisible corpuscles or atoms; and corpuscle or little body, an assemblage or mass of secondary particles or secondary corpuscles. The distinction, however, is of little moment. Particles are then the elements of bodies; it is the various arrangement and texture of these, with the difference of the cohesion, &c., that constitute the various kinds of bodies, hard, soft, liquid, dry, heavy, light, &c. The smallest particles or corpuscles cohere with the strongest attractions, and always compose larger particles of weaker cohesion; and many of these cohering compose larger particles whose vigor is still weaker; and thus on for divers successions, till the progression ends in the largest particles, whereon the operations in chemistry, and the colors of natural bodies depend, and which, by cohering, compose bodies of sensible bulks. The cohesion of the particles of matter, according to the Epicureans, was effected by hooked atoms; the Aristotelians thought it managed by rest, that is, by nothing. But Sir Isaac Newton maintains it to be by means of a certain power, whereby the particles mutually attract or tend towards each other, which is still, perhaps, giving a fact without the cause. By this attraction of the particles, he shows that most of the phenomena of the lesser bodies are affected, as those of the heavenly bodies are by the attraction of gravity. See **ATTRACTION** and **COHESION**.

PARTICLE, in grammar, is a denomination for all those words that unite or disjoin others; or that express the modes or manners of words or things. It comprehends all those parts of speech divided by grammarians into articles, adverbs, prepositions, interjections, and conjunctions.

PARTICLE, in theology, is used in the Latin church for the crumbs, or small pieces of consecrated bread, called in the Greek church *μεσίδες*. The Greeks have a particular ceremony, called *των μεσίδων*, of the particles, wherein certain crumbs of bread, not consecrated, are offered up in honor of the Virgin, St. John the Baptist, and several other saints. They also give them the name of *προσφορά*, oblation. Gabriel, archbishop of Philadelphia, wrote a treatise express *των μεσίδων*, wherein he endeavours to show the

antiquity of this ceremony, in that it is mentioned in the liturgies of St. Chrysostom and Basil. There has been much controversy on this head between the reformed and catholic divines. Auberton and Blondel explain a passage in the theory of Germanus, patriarch of Constantinople, where he mentions the ceremony of the particles as in use in his time, in favor of the former; Messieurs de Port Royal contest the explanation; but M. Simon, in his notes on Gabriel of Philadelphia, endeavours to show that the passage itself is an interpolation, not being found in the ancient copies of Germanus, and consequently that the dispute is very ill grounded.

PARTICULAR, *adj.* } Fr. *particulier*; Sp. *particular*; and Port. *particular*;
PARTICULARITY, *n. s.* }
PARTICULARIZE, *v. a.* } Ital. *particolare*; Lat. *particularis*, à pars, a
PARTICULARLY, *adv.* } part. Relating to a
PARTICULATE, *v. a.* } part. Relating to a
 part or to a single thing; individual; odd; attention to distinct or minute things: as a noun substantive, a single instance; a detail of single things or items; interest or state of an individual; single self; 'in particular' means peculiarly; distinctly: particularity is distinct notice or account; individuality; petty or detailed account; something belonging to a single person, thing, or occasion; something peculiar; oddity; scrupulousness: to particularise, or particulate (the latter obsolete), means to mention or narrate in detail; show minutely: particularly is, singly; distinctly; extraordinarily.

He, as well with general orations as *particular* dealing with men of most credit, made them see how necessary it was. *Sidney.*

Rather performing his general commandment, which had ever been, to embrace virtue, than any new *particular*, sprung out of passion, and contrary to the former. *Id.*

So did the boldness of their affirmation accompany the greatness of what they did affirm, even descending to *particularities*, what kingdoms he should overcome. *Id.*

As well for *particular* application to special occasions, as also in other manifold respects, infinite treasures of wisdom are abundantly to be found in the holy scripture. *Hooker.*

Our wisdom must be such, as doth not propose to itself *re ides* our own *particular*, the partial and immoderate desire whereof poisoneth wheresoever it taketh place; but the scope and mark, which we are to aim at, is the publick and common good. *Id.*

Knowledge imprinted in the minds of all men, whereby both general principles for directing of human actions are comprehended, and conclusions derived from them, upon which conclusions growth, in *particularity*, the choice of good and evil. *Id.*

His general loved him

In a most dear *particular*. *Shakspeare.*
 For his *particular*, I'll receive him gladly;
 But not one follower. *Id.*

Let the general trumpet blow in
Particularities, and petty sounds

To cease. *Id. Henry VI.*

The leanness that afflicts us, is an inventory to *particularize* their abundance. *Id. Coriolanus.*

I may not *particulate* of Alexander Hales, the irrefragable doctor. *C Camden's Remains.*

Wheresoever one plant draweth such a *particular* juice out of the earth, as it qualifieth the earth, so as that juice which remaineth is fit for the other plant, there the neighbourhood doth good. *Bacon.*

Of this prince there is little *particular* memory; only that he was very studious and learned. *Id.*

I must reserve some *particulars*, which it is not lawful for me to reveal. *Id.*

Artists, who propose only the imitation of such a *particular* person, without election of ideas, have often been reproached for that omission. *Dryden.*

Invention is called a muse; authors ascribe to each of them in *particular* the sciences which they have invented. *Id.*

This exact propriety of Virgil I *particularly* regarded as a great part of his character. *Id.*

It is the greatest interest of *particulars* to advance the good of the community. *L'Estrange.*

I have been *particular* in examining the reason of children's inheriting the property of their fathers, because it will give us farther light in the inheritance of power. *Locke.*

Having the idea of an elephant or an angle in my mind, the first and natural enquiry is, whether such a thing does exist? and this knowledge is only of *particulars*. *Id.*

This is true of actions considered in their general nature or kind, but not considered in their *particular* individual instances. *South.*

Those notions are universal, and what is universal must needs proceed from some universal constant principle; the same in all *particulars*, which can be nothing else but human nature. *Id.*

Providence, that universally casts its eye over all the creation, is yet pleased more *particularly* to fasten it upon some. *Id. Sermons.*

The reader has a *particular* of the books, wherein this law was written. *Ayliffe's Parergon.*

We are likewise to give thanks for temporal blessings, whether such as concern the publick, as the prosperity of the church, or nation, and all remarkable deliverances afforded to either; or else such as concern our *particular*. *Duty of Man.*

The master could hardly sit on his horse for laughing, all the while he was giving me the *particulars* of this story. *Addison.*

To see the titles that were most agreeable to such an emperor, the flatteries that he lay most open to, with the like *particularities* only to be met with on medals, are certainly not a little pleasing. *Id.*

It is in the power of more *particular* persons in this kingdom, than in any other, to distress the government, when they are disobliged. *Id. Freeholder.*

This in *particular* happens to the lungs. *Blackmore.*

He not only boasts of his parentage as an Israelite, but *particularizes* his descent from Benjamin. *Atterbury.*

Vespasian he resembled in many *particulars*. *Swift.*

Adversity has ever been considered as the state in which a man most easily becomes acquainted with himself, *particularly* being free from flatterers. *Johannson.*

PARTING, in chemistry, an operation by which gold and silver are separated from each other. As these two metals resist equally well the action of fire and of lead, they must therefore be separated by other methods. This separation could not be effected if they were not soluble by different menstruums. Nitrous acid, marine acid, and sulphur, which cannot dissolve gold, attack silver very easily; and therefore these three agents furnish methods of separating silver from gold, or of the operation called parting.

Although parting by aquafortis be easy, it cannot be very exact, unless we attend to some es-

several circumstances. I. The gold and silver must be in a proper proportion : for, if the gold be in too great quantity, the silver will be covered and guarded by it from the action of the acid. Therefore, when the essayers do not know the proportion of these two metals in the mass to be operated upon, they discover it by the following method :—They have a certain number of needles composed of gold and silver alloyed together in graduated proportions, and the alloy of each needle is known by a mark upon it. These are called proof needles. When essayers want to know early the proportion of gold and silver in a mass, they rub this mass upon a touchstone, so as to leave a mark upon it. They then make marks upon the touchstone with some of the needles, the color of which they think comes nearest to that of the mass. By comparing the marks of these needles with the mark of the mass, they discover nearly the proportion of the gold and silver in the mass. If this trial shows that in any given mass the silver is not to the gold as three to one, this mass is improper for the operation of parting by aquafortis. In this case, the quantity of silver necessary to make an alloy of that proportion must be added. This operation is called quartation, probably because it reduces the gold to a fourth part of the whole mass. II. That the parting may be exact, the nitrous acid or aquafortis employed must be very pure, and especially free from mixture of vitriolic and marine acids. For, if this be not attended to, a quantity of silver proportionable to these two foreign acids will be separated during the solution; and this portion of silver, reduced by these acids to vitriol of silver and to luna cornea, will remain mingled with the gold, which consequently will not be entirely purified by the operation. When the metallic mass is properly alloyed, it is to be reduced to plates, rolled up spirally, called cornets; or to grains. These are to be put into a matrass, and upon them a quantity of aquafortis is to be poured, the weight of which is to that of the silver as three to two: and, as the nitrous acid employed for this operation is rather weak, the solution is assisted, especially at first, by the heat of a sand bath, in which the matrass is to be placed. When, notwithstanding the heat, no further mark of solution appears, the aquafortis charged with silver is to be decanted. Fresh nitrous acid is to be poured into the matrass, stronger than the former, and in less quantity, which must be boiled on the residuous mass and decanted as the former. Aquafortis must even be boiled a third time on the remaining gold, that all the silver may be certainly dissolved. The gold is then to be washed with boiling water. This gold is very pure if the operation has been performed with due attention. It is called gold of parting. See ASSAYING. The gold and silver thus operated upon ought to have been previously refined by lead, and freed from all alloy of other metallic matters, so that the gold which remains should be as pure as is possible.

Concentrated parting is performed by cementation, and may be used when the quantity of gold is so great in proportion to the silver that it cannot be separated by aquafortis. A cement

must be first prepared, composed of four parts of bricks powdered and sifted, of one part of green vitriol calcined till it becomes red, and of one part of common salt. The whole is very accurately mixed together, and a firm paste is made of it by moistening it with a little water or uripe. The gold to be cemented is to be reduced to thin plates, as thin as small pieces of money. At the bottom of the crucible or cementing pot, a stratum of cement, of the thickness of a finger, is to be put, which is to be covered with plates of gold; upon these another stratum of cement is to be laid, and then more plates of gold, till the crucible is filled with these alternate strata of cement and of gold. The whole is then to be covered with a lid, which is to be luted with a mixture of clay and sand. This pot is to be placed in a furnace or oven, and heated by degrees till it is moderately red, which heat is to be continued during twenty-four hours. The heat must not be so great as to melt the gold. The pot is then left to cool, and the gold is to be carefully separated from the cement, and boiled at different times in a large quantity of pure water. This gold is to be assayed upon a touchstone or otherwise; and, if it be found not sufficiently purified, it is to be cemented a second time in the same manner. The sulphuric acid of the bricks and of the calcined vitriol disengages the muriatic acid of the common salt during this cementation; and this last acid dissolves the silver alloyed with the gold, and separates it by that means. Instead of sea-salt, nitre may be used with equal success; because the nitrous acid is then put in a state to attack the silver, notwithstanding the quantity of gold which covers it.

Parting by fusion, or dry parting, is performed by sulphur, which has the property of uniting easily with silver, while it does not attack gold. This method of separating these two metals would be the cheapest, the most expeditious, and convenient of any, if the sulphur could dissolve the silver, and separate it from the gold as well and as easily as nitrous acid does: but, on the contrary, we are obliged to employ a particular treatment, and a kind of concentration, to begin the union of the sulphur alloyed with gold. The most advantageous method of separating a small portion of gold from a large one of silver appears to be by sulphur, which unites with and scorifies the silver without affecting the gold; but as sulphuretted silver does not flow thin enough to suffer the small particles of gold diffused through it to reunite and settle at the bottom, some addition is necessary for collecting and carrying them down. In order to the commixture with the sulphur, fifty or sixty pounds of the mixed metal, or as much as a large crucible will receive, are melted at once, and reduced into grains, by taking out the fluid matter with a small crucible made red hot, and pouring it into cold water stirred with a rapid circular motion. From one-fifth to one-eighth of the granulated metal, according as it is richer or poorer in gold, is reserved, and the rest well mingled with one-eighth of powdered sulphur. The grains enveloped with the sulphur are again put into the crucible, and the fire kept gentle for some time, that the silver, before it melts may be

thoroughly penetrated by the sulphur: If the fire be hastily urged, great part of the sulphur will be dissipated, without acting upon the metal. If to sulphureted silver infusion pure silver be added, the latter falls to the bottom, and forms there a distinct fluid not miscible to the other. The particles of gold, having no affinity with the sulphureted silver, join themselves with the pure silver, wherever they come in contact with it, and are thus transferred from the former into the latter, more or less perfectly, according as the pure silver was more or less thoroughly diffused through the mixed. It is for this use that a part of the granulated metal was reserved. The sulphureted mass being brought into perfect fusion and kept melted for near an hour in a close covered crucible, one-third of the reversed grains is thrown in; and, as soon as this is melted, the whole is well stirred, that the fresh silver may be distributed through the mixed to collect the gold from it. The stirring is performed with a wooden rod; an iron one would be corroded by the sulphur, so as to deprive the mixed of its due quantity of sulphur, and likewise render the subsequent purification of the silver more troublesome. The fusion being continued an hour longer, another third of the unsulphureted grains is added, and an hour after this the remainder; after which the fusion is further continued for some time, the matter being stirred at least every half hour from the beginning to the end, and the crucible kept closely covered in the intervals. The sulphureted silver appears in fusion of a dark brown color; after it has been kept melted for a certain time, a part of the sulphur having escaped from the top, the surface becomes white, and some bright drops of silver, about the size of peas, are perceived on it. When this happens, which is commonly in about three hours after the last addition of the reserved grains, sooner or later, according as the crucible has been more or less closely covered, the process is discontinued; for otherwise more and more of the silver, thus losing its sulphur, would subside, and mingle with the part at the bottom in which the gold is collected; the whole is poured out into an iron mortar greased and duly heated; or, if the quantity is too large to be safely lifted at once, a part is first taken out from the top with a small crucible, and the rest poured into the mortar. The gold, diffused at first through the whole mass is now found collected into a part of it at the bottom, amounting only to about as much as was reserved unsulphureted. This part may be separated from the sulphureted silver above it by a chisel and hammer; or, more perfectly, the surface of the lower mass being generally rugged and unequal, by placing the whole mass with its bottom upwards in a crucible: the sulphureted part quickly melts, leaving unmelted that which contains the gold, which may thus be completely separated from the other. The sulphureted silver is assayed by keeping a portion of it in fusion in an open crucible till the sulphur is dissipated, and then dissolving it in aquafortis. If it should still be found to contain any gold, it is to be melted again; as much more unsulphureted silver is to be added as was employed in each of the former injections, and the

fusion continued about an hour and a half. The gold thus collected into a part of the silver may be further concentrated into a smaller part, by granulating the mass and repeating the whole process. The operation may be again and again repeated, till so much of the silver is separated that the remainder may be parted without much expense.

PARTING GLASSES. Glass vessels used for parting gold and silver. They have the form of truncated cones, the bottom being commonly about seven inches wide, the aperture about one or two inches wide, and the height about twelve inches. These vessels ought to have been well annealed, and chosen free from flaws; as one of the chief inconveniences attending the operation is, that the glasses are apt to crack by exposure to cold, and even when touched by the hand. Some operators secure their glasses by a coating. For this purpose they spread a mixture of quick lime, slaked with beer and whites of eggs, upon linen cloth, which they wrap round the lower part of the vessel, leaving the upper part uncovered, that they may see the progress of the operation; and over this cloth they apply a composition of clay and hair. Schlutter advises to put the parting glasses into copper vessels, containing some water, and supported by trevets, with fire under them. When the heat communicated by the water is too great, it may be diminished by adding cold water; which must be done very carefully by pouring against the sides of the pan, to prevent too sudden an application of cold to the parting glass. The intention of this contrivance is, that the contents of the glasses, if these should break, may be received by the copper vessel. Into a glass fifteen inches high, and ten or twelve inches wide at bottom, placed in a copper pan twelve inches wide at bottom, fifteen inches wide at top, and ten inches high, he usually put about eighty ounces of metal, with twice as much aquafortis.

PARTISAN, n. s. Fr. *partisan*; Ital. *partisano*. An adherent to or head of a party; also (Fr. *partisane*) a kind of pike or halbert.

Let us
Find out the prettiest dazied plot we can,
And make him with our pikes and *partisans*
A grave. *Shakespeare. Hamlet.*

Some of these *partisans* concluded, the government had hired men to be bound and pinioned.

Addison.

I would be glad any *partisan* would help me to a tolerable reason, that, because Clodius and Curio agree with me in a few singular notions, I must blindly follow them in all. *Swift.*

PARTITION, n. s. & v. a. From **PART**. Division; the act of dividing or division made; that by which a whole is separated into parts; the point or time of separation.

For he is our peace, who hath made both one; and hath broken down the middle wall of *partition* between us. *Ephes. ii. 14.*

It doth not follow, that God, without respect, doth teach us to erect between us and them a *partition* wall of difference, in such things indifferent as have been disputed of. *Hooker.*

We grew together,
Like to a double cherry, seeming parted,
But yet an union in partition. *Shakespeare.*

Can we not
Partition make with spectacles so precious
Twixt fair and foul? *Id. Cymbeline.*

Make partitions of wood in a hogshead, with heels
in them, and mark the difference of their sound
from that of an hogshead without such partitions.

Bacon.
The sides are uniform without, though severally
partitioned within. *Id.*

Enclosures our factions have made in the church,
become a great partition wall to keep others out of it.
Decay of Piety.

Partition firm and sure,
The waters underneath from those above
Dividing. *Milton's Paradise Lost.*

Lodged in a small partition; and the rest
Ordained for uses to his Lord best known.

Milton.
The day, month, and year, measured by them, are
used as standard measures, as likely others arbitra-
rily deduced from them by partition or collection.

Holder on Time.
The mound was newly made, no sight could pass
Betwixt the nice partitions of the grass,
The wall united sods so closely lay. *Dryden.*

At one end of it is a great partition, designed for
an opera. *Addison.*

The partition between good and evil is broken
down; where one sin has entered legions will force
their way. *Rogers.*

PARTLET, *n. s.* Ital. *pareta* and *lattucca*
(a nurse's dress). A ruff for the neck; hence a
hen with a natural ruff on the neck.

Thou dotard, thou art woman tired; unroosted
By thy dame partlet here. *Shakespeare.*

Tired with pinned ruffs, and fans, and partlet
strips. *Hall.*

Dame partlet was the sovereign of his heart;
He feathered her. *Dryden's Fables.*

PARTNER, *n. s. & v. a.* } From **PART**. He
PARTNERSHIP. } who shares or par-
takes with another; particularly a joint sharer
in a business or trade; one who dances with
another: to join in partnership: partnership is,
joint interest or property; union for such in-
terest. See below.

My noble partner
You greet with present grace. *Shakespeare. Macbeth.*

Lead in your ladies every one; sweet partner,
I must not yet forsake you. *Id. Henry VIII.*

A lady who
So fair, and fastened to an empery,
Would make the greatest king double to be part-
nered.

With tomboys, hired with self-exhibition,
Which your own coffers yield. *Shakespeare.*

Sapor, king of Persia, had an heaven of glass,
which sitting in his estate, he trod upon, calling
himself brother to the sun and moon, and partner
with the stars. *Peucham.*

Those of the race of Sem were no partners in the
unbelieving work of the tower. *Raleigh's History.*

To undergo
Myself the total crime; or to accuse
My other self, the partner of my life. *Milton.*

He does possession keep
And is too wise to hazard partnership. *Dryden.*

'Tis a necessary rule in alliances, partnerships,
and all manner of civil dealings, to have a strict re-
gard to the disposition of those we have to do withal.

L'Estrange.
The soul continues in her action, till her partner
is again qualified to bear her company. *Addison.*

An admission made by one of the two partners,
after the dissolution of the partnership, is competent
evidence to charge the other partner.

Taunton's Reports.
PARTNERSHIP, in English law. The law on this
important subject we purpose to arrange under
the following heads:—1. The nature and forma-
tion of a partnership. 2. The rights and powers
of partners amongst themselves. 3. Their lia-
bilities to third persons. 4. The exceptions to
such liability. 5. The means of dissolution.

SECT. I.—OF THE NATURE OF A PARTNERSHIP AND ITS FORMATION.

In order to constitute a partnership it is es-
sential that there should be a communion of
profit and loss. This is the criterion by which
to determine the question whether persons are
partners or not. An agent who is paid by a
proportion of the profits of an adventure does
not thereby become a partner in the property,
though it may render him liable as a partner to
third persons. 5 Taunt. 74. 2 Barn. 401.

If a person make himself responsible to the
vendor for a purchase, upon an agreement with
the purchaser, that if any profit arise from the
sale he shall have one-half for his trouble; this
does not constitute a partnership between the
parties. 4 East 141. A partnership may be
limited to a particular concern, without extend-
ing to all the concerns in which another member
of the firm is engaged, 4 Esp. 182. It was
ruled by lord Ellenborough that, if there be a
partnership as to third persons, the presumption
of law is that there is a partnership between the
parties. 2 Camp 45.

The cases in which the courts have determined
what particular circumstances constitute a part-
nership will best explain the legal definition of
its nature. We proceed therefore to state some
of the principal decisions on this point. A,
having neither money nor credit, offers to B,
that, if he will order with him certain goods to
be shipped upon an adventure, if any profit
should arise from them B should have half for
his trouble. B having lent his credit on this
contract and ordered the goods on their joint
account, which were furnished accordingly, and
afterwards paid for by Balone: held that he was
entitled to recover back such payment in as-
sumpsit against A, who had not accounted to
him for the profits, such contract not constituting
a partnership as between themselves, but only
an agreement for a compensation for trouble and
credit, though B were liable as a partner to third
persons, creditors. 4 East 144.

A and B, general partners in trade, being in-
debted to C for advances paid by him on the
joint account of the three in the purchase of
tobacco which had been sent out on a special
joint adventure to Spain, with a view to liquidate
that balance, C agreed with A and B to join
with them in another adventure to Lisbon, of
which he was to have one moiety; and it was

agreed that A and B should purchase goods for the adventure, to be shipped on board a certain vessel, and pay for them, and the returns of such adventure were to be made to C to go in liquidation of his demand on them; but C was to bear his proportion of the loss if any; and also to receive his share of the profits if any after reimbursing himself out of the returns the amount of his advances previously made to A and B. The court of king's bench held that this agreement constituted a partnership between the three in the adventure, at and from the time of the purchase of the goods for the adventure by A and B, although C did not go with them to make the purchase nor authorize them to purchase on the joint account, but A and B alone, in fact, made the purchase; and although C also purchased in his own name, and paid for goods to be sent out at the same time in which B was to share the profit or loss, and these goods were consigned for sales and returns to the same persons who went out as supercargo on the joint account of the three. 12 East 421.

SECT. II.—OF THE RIGHTS AND POWER OF PARTNERS AMONG THEMSELVES.

If there is no express stipulation as to the management of partnership property, the majority must decide as to the disposition and management of the partnership concerns. One partner cannot bind the other partners by deed, except in bankruptcy. 7 Term Rep. 207. But he may by drawing or accepting bills of exchange. 7 Term Rep. 210. And, it is said that, if the partners agree that one member of the firm may bind it by deed, such agreement is valid. 7 T. R. 207. So if one partner in the presence of the other, and by his authority, execute a deed for both of them in a transaction in which they are both interested, it is a valid execution by both, although there is but one seal. 4 T. R. 313. And it is undoubted that the execution of a deed is valid, as the separate act of the person by whom it is actually executed. 2 B and B 338. So if a partnership, indebted on simple contract, intend that a bond shall be given, and by mistake it is executed by the senior partner only in the partnership firm, the creditor is entitled to rank as a special creditor against the estate of any of the partners. 3 Vesey, 73.

If the partners' life effects are taken and sold under an execution against one partner only, the sheriff is to pay over to the other partners a share of the produce proportioned to their shares in the partnership effects. As a general rule one partner cannot sue another in a court of law; but must seek relief in equity. Thus a number of persons agreeing to subscribe sums of money for the purpose of obtaining a bill in parliament to make a railway are partners in the undertaking; and, therefore, a subscriber who acted as their surveyor cannot maintain an action for work done by him in that character, on account of his partnership, against all or any of the other subscribers. 1 Barn. and Cress. 74. So also, the partners in one house of trade cannot maintain an action against the partners in another house of trade, of which one of the partners in the

plaintiff's house is also a member, for transactions which took place while he was partner in both houses; and that whether the action be brought in the life time of the common partner or after his decease: but after his decease the surviving partners of the one house may sue the surviving partners of the other house upon transactions subsequent to the decease of the common partner. 6 W. P. Taunt. 597.

To this general rule, that one partner cannot maintain an action at law against his co-partner, there are however several exceptions. For instance, if partners covenant to account, and a balance is struck, and the indebted partner promises to pay, an action of assumpsit may be maintained. 2 T. Rep. 483. And, if two persons agree to share in profit or loss upon goods bought by one of them on joint account, an action will lie against the other for the payment of his share. 13 East 7. So one partner may maintain an action against the other for money received to the separate use of the former and wrongfully carried to the partnership account. 2 Term Rep. 476.

The following cases are also explanatory of the principle which regulates this exception to the general rule. The defendant agreed in writing to take one half share of certain goods bought by the plaintiff on their joint account, half in the profit or loss, and to furnish the plaintiff with half the amount in time for the payment thereof, the goods being to be paid for by bills. The court of king's bench held, that the plaintiff having paid the whole price of the goods which were to constitute the partnership stock to which both parties were to contribute equally, an action lay against the defendant for his moiety of the price which was to be furnished by him in the first instance, although there might be an account to be taken between them as partners upon the subsequent disposal of the joint stock. 13 East 7. Where money is owing to two partners, and after the death of one it is paid to a third person, the surviving partner may maintain an action for money had and received in his own right and not as survivor. 2 Term Rep. 140.

On the subject of the expenses of conducting a partnership concern, the following case may be material:—If, after two partners have lived in the same house where the business is carried on, one of them take and live in a separate house for his dwelling, and the remaining partner manage the whole business, and is at considerable expense in treating the customers, and such treating is necessary and usual, but not universal in the trade; and a balance of profits and expenses is struck every year without any demand for the expenses of such treating; and it is usual for articles of partnership to contain a covenant for such expenses, the remaining partner is not entitled to an allowance for such expenses. 1 Ans. 94. In some respects an individual partner, or a particular partnership consisting of two or more such persons as are partners in some larger partnership, may be considered as third persons in transactions in which the general partnership may happen to be engaged with a correspondent. Per Eyre C. J. 1 Bos. and Pull. 546, 547. If partners by deed assign all

their partnership effects, &c., to trustees for the benefit of their creditors, and some of the separate creditors of one partner do not assent to it, the assignment is fraudulent and void. 8 Term Rep. 140. An admission by one of the two partners, after the dissolution of the partnership, is competent evidence to charge the other partner. 1 W. P. Taunt. 104. If the names of two partners in trade appear (among others) on the certificate of registry as owners of a ship, the registry acts do not prevent the showing how and in what proportions the several owners are respectively entitled, and the partners may derive title under different conveyances; yet if their shares were purchased with the partnership funds and treated by them as partnership property, and the partners become bankrupt, these shares will be considered as the joint property. Term Rep. Hil. 56 Geo. III. To prevent the ends of justice from being defeated in criminal prosecutions by the difficulty of ascertaining the names of every owner of property, the 7th George IV. cap. 64, sec. 14, enacts that, 'in any indictment or information for felony or misdemeanor, when it shall be necessary to state the ownership of property, it shall be sufficient to name one owner;' and this extends to all partners in trade, joint tenants, parceners, or tenants in common as well as to trustees and joint stock companies.

SECT. III.—OF THE LIABILITIES OF PARTNERS TO THIRD PERSONS.

Where there is a share of profits there shall also be a share of losses; for whoever takes a part of the capital, or of the profits of it, takes a part of that fund to which the public have given credit, and to which they look for payment. Dormant partners are liable when discovered, because they would otherwise receive usurious interest and without a risk. Another, and perhaps a better, reason is, that the act of the partner binds all his co-partners, on account of the communion of profit and loss. The following cases will explain the nature of the liabilities incurred by the several persons who compose a partnership.

Where the consignee of goods (to whom the bill of lading was indorsed in blank) assigned it over as a security for acceptance given by the assignee not amounting to the value of the goods, and afterwards they became partners in the goods by an agreement between them that the profits and loss should be equally divided, but the first was to stand guarantee to the other for the solidity of the factors by whom the goods were to be sold; and it appeared by the agreement that the consignor had not been paid for the goods; the assignee of the bill of lading cannot maintain trover against the consignor if he stop the goods in transitu on the insolvency of the consignee; for one partner cannot recover those goods which the other could not. 2 Term. Rep. 674. An action cannot be maintained by several partners for goods sold by one of them living in Guernsey, and packed by him in a particular manner for the purpose of smuggling, though the other partners who resided in England knew nothing of the sale; for the act of one is, in this respect, the act of all; and as it is a contract by

subjects of this country, made in contravention of the laws, this case must be considered in the same light as if all the partners resided in England. 3 Term. Rep. 454. 5 Term Rep. 599. 4 Term Rep. 466. If one partner draw or indorse a bill in the partnership firm, it will prima facie bind the firm, although passed by the one partner to a separate creditor in discharge of his own debt, unless there be evidence of covin between such separate debtor and creditor, or at least of the want of authority either express or implied in the debtor partner to give the joint security of the firm for his separate debt. But the court of king's bench held that no sufficient circumstance appeared in this case to raise any presumption adverse to the separate creditor taking such joint security in a case where the bill appeared to have been drawn in the name of the firm to their own order, eighteen days before the delivery of it to the separate creditor, and to have been accepted and indorsed before such delivery, and to have been drawn for a larger amount than the particular debt, and where, though the indorsement was in fact made by the hand of the debtor partner, yet it did not appear that that fact was known to the separate creditor at the time, and this too in a case where direct evidence might have been given of the covin or want of authority if it existed. 13 East 175.

A and B, ship agents at different ports, enter into an agreement to share in certain proportions the profits of their respective commissions, and the discount on tradesmen's bills employed by them in repairing the ships consigned to them, &c. By this agreement they were held to become liable as agent: though the agreement provided that neither should be answerable for the acts or losses of the other, but each for his own. 2 H. Blacks. 235. Where A, B, and C, were engaged in a cotton trade under the firm of A and B (C not being known to the world as a partner), and A and B traded under the same firm as grocers, and a bill given to them in the cotton business was indorsed in the firm common to partnerships, and given in payment by A and C for goods received in their grocery business; the court of king's bench held that C was liable to pay the bill to the holders, although the indorsement was unknown to C, of whom the indorsee had no knowledge at the time of the indorsement. 7 East 209. One of two partners applied trust money in the trade with the privity of the other partners; afterward they separated, and the partnership effects were assigned over to the first who took on him the debts; this was held to be no payment in discharge of the other partner, but both were liable to make good the trust money. 5 Term Rep. 601. A contract made by two partners to pay a certain sum of money to a third person equally out of their own private cash is a joint contract, and they must be jointly sued upon it. 1 H. Blacks. 236.

If three partners (two of whom reside abroad and one in England) be sued for a partnership debt, and the partner resident in England appear to the action, but refuses to appear for the partners resident abroad, the sheriff under a distringas against the two partners may take partnership

effects, though paid for by the partner resident in England alone, to whom the partnership was legally indebted; and the court will not relieve him against such distress. 3 Bos. and Pull. 254. In assumpsit against one of several partners for not delivering goods, with account for money had and received, to which defendant pleaded that the promises were jointly made with A and B, made the contract individually though in the name of the partnership, and for the sale of partnership property; and that in fraud of his partners he received the money to his own use: though the bill drawn by him for the money was in the partnership name. Held that plaintiff might recover the money so received under the common court. Term Rep. Hil. 56. Geo. III.

Where one of three partners, after a dissolution of partnership, undertook by deed to pay a particular partnership debt on two bills of exchange, and that was communicated to the holder, who consented to take the separate notes of the one partner for the amount, strictly reserving his right against all three, and retained possession of the original bills. Held that the separate notes having proved unproductive he might still resort to his remedy against the other partners, and that the taking under these circumstances the separate notes, and even afterwards renewing them several times successively, did not amount to satisfaction of the joint debt Term Rep. Mich. 53, Geo. III.

It has been said (but it does not appear conclusively settled) that if one partner sign a letter of credit or guarantee in the name of all the partners, it binds the firm. But that there is a material difference between one partner pledging the guarantee of the firm for his separate debt, and his negotiating bills in the partnership firm. 1 East 48. After a general partnership between two conveyancers in the country; if money be received partly by one of the firm, and partly by the other, to be laid out upon a mortgage, which is forged by one of the partners without the knowledge of the other, the innocent partner is liable to repay the money. 2 Cowp. 814.

It is sometimes the case that although no contract of partnership has been actually entered into between persons acting or dealing together, so as to bind each other among themselves, yet a partnership is held to be subsisting, and a consequent liability to be incurred to third persons. So also a previous partnership, which has ceased as between the partners, may be held to continue as regards the world. Thus if a person suffer his name to be used as a partner he is liable to third persons.

If an outgoing partner is to receive an annuity and a per centage upon all sales to his old customers, and to new customers by him recommended, it seems that the partnership as to third persons continues. 2 H. Blackst. 242. It has been said that the liability of the outgoing partner is to be determined by considering whether the payment is certain and defined, or depending upon the casualties of trade. So, also, the liability is said to depend upon his agreeing to share the profits, or only relying upon the profits as a fund for payment. 2 Blackst. 998.

In partnerships not incorporated, the indivi-

dual partners are liable for the debts of the joint trade without limitation. The members of incorporated societies are liable for their respective shares, or, according to 6 Geo. IV. cap. 91, in such other degree as the charter of incorporation may prescribe.

SECT. IV.—OF THE EXCEPTIONS TO THE LIABILITY OF PARTNERS.

A joint purchase without any communion or profit does not constitute a liability to third persons. Thus, if a purchase be made upon an agreement that one of the parties shall be ostensible buyer, and each party have a distinct share of the whole; and the ostensible purchaser is the only party known to the vendor, the other parties are not liable for payment. 1 H. Blackst. 37. A communion of subsequent profits, without any joint interest at the time of the purchase, does not constitute a joint liability. 4 T. R. 724. As a general rule, it may be observed, that the liability of one partner for the acts of another extends only to debts contracted in the course of the partnership concern.

A dormant partner is not responsible for a bill of exchange, accepted by the acting partners in their names, unless such bill relate to the business of the partnership—the sleeping partner having no privity of interest in the bill. 2 Car. and Pay. 138. A member of a firm who retires from the partnership, is not liable on account of the remaining members continuing his name without his consent. And if the remaining partners continue the trade in the style of the old firm, after due notice of the dissolution, it seems that there is not any necessity for the protection of the outgoing partner that he should apply to a court of equity to restrain the remaining partners from the use of the style of the old firm. 2 Camp. 617. This, however, supposes that all the measures of precaution by advertisement, notice, &c., have been adopted.

An agreement by the remaining members of a firm to pay to an outgoing partner an annuity for his interest at the time of the dissolution in the profits and good will does not constitute a liability as partners to third persons. A share in a ship or other specific object does not constitute a general partnership; and therefore the responsibility is limited to that particular object.

If the proprietor of cattle agree with the owner of land that the cattle shall be pastured upon the land, and that the profit after they are fatted above a certain sum at which the cattle are estimated, shall be equally divided between the proprietor of the cattle and the owner of the land; this is merely a mode of paying for the pasture, and does not constitute a joint liability. 1 Camp. 331, in notes.

If the contract is for an antecedent debt, due from the partner to the contracting party, the presumption seems to be that the firm is not liable. 1 East. 48.

If there be any speculation of which one of the partners should disapprove, he may avoid responsibility by giving notice, to those with whom the other partners are about to contract, that he will not be concerned in it. Two (of three) partners who had contracted a debt prior to the

admission of the third partner into the firm cannot bind him, without he assent by accepting a bill drawn by the creditor in their joint names; but such security is fraudulent and void as against the third partner, and cannot be recovered in an action against the three, wherein one only of the original partners plead to the action. 1 East. 48, 49. Where A and C had entered into an agreement to purchase goods in the name of A only, and to take aliquot shares of the purchase, but it did not appear that they were jointly to resell the goods, the court of common pleas (Wilson J. Diss.) held that on failure of A, the ostensible buyer, B and C were not answerable as partners with him. 1 H. Blackst. 37.

Acts subsequent to the time of delivering goods on a contract may be admitted as evidence to show that the goods were delivered on a partnership account, if it were doubtful at the time of the contract; but, if it clearly appear that no partnership existed at the time of the contract, no subsequent act, by any person who may afterwards become a partner (not even an acknowledgment that he is liable on his accepting a bill of exchange drawn on them as partners for the very goods), will make him liable in an action for goods sold and delivered, though he will be liable in an action on the bill of exchange. 4 Term Rep. 720. On the dissolution of a partnership between A, B, and C, a power given to A, to receive all debts owing to, and to pay all those owing from the late partnership, does not authorise him to indorse a bill of exchange in the name of the partnership, though drawn by him in that name and accepted by a debtor to the partnership after the dissolution. The person therefore to whom he so indorses it cannot maintain an action on it against A, B, and C, as partners. 1 H. Blackst. 155. Neither can such indorsee maintain an action against A, B, and C, for money paid to the use of the partnership, though in fact the money advanced by him in discounting the bill be applied by A to the payment of a debt due from the partnership. 1 H. Blackst. 155.

The authority of one partner to bind another, by signing bills of exchange and promissory notes in their joint names, is only an implied authority, and may be rebutted by express previous notice to the party taking such security from one of them, that the other would not be liable for it; and this though it were represented to the holder, by the partner signing such security, that the money advanced on it was raised for the purpose of being applied to the payment of partnership debts and though the greater part of it were in fact so applied. Nor can he recover against the other partner to the amount of the sums so applied to the payment of the partnership debts against such notice. 10 East. 264. If several persons horse, with horses their several property, the several stages of a coach in the general profits of which they are partners, they are not jointly liable for goods furnished to one partner for the use of the horses drawing the coach along his part of the road. 2 W. P. Taunt. 49. In an action on the case, upon a delivery of goods to several joint owners of a ship to be carried to A for freight alleging a

deviation if the plaintiff fail in proving all the defendants to be owners he cannot recover, even against those whom he proves to be owners. 2 New Rep. C. P. 454.

A bond was given to the several persons constituting the firm of a banking house, conditioned for the repayment of the balance of an account, and of such further sums as the bankers might advance to the obligor; one of the partners dies, and a new partner is taken into the firm: at that time a considerable balance is due from the obligor to the firm, advances are afterwards made by the bankers, and payments made to them on account by the obligor; the latter is credited by the new firm with the several payments, and charged with the original debt and subsequent advances, as constituting items in one entire account, and the balance due at the time of the partner's death is considerably reduced; and that reduced balance, by order of the obligor, is transferred by the bankers to the account of another customer, who, with his assent, is charged with the then debt of the obligor. The person so charged having become insolvent, the surviving partners of the original firm brought their action upon the bond. Held that as they had not originally treated it as a distinct account, but had blended it in the general account with other transactions, they were not at liberty so to treat it at a subsequent period, and, having received in different payments a sum more than sufficient to discharge the debt due upon the bond, was to be considered as paid. Term. Rep. Mich. 59 Geo. III.

SECT. V.—OF THE DISSOLUTION OF PARTNERSHIPS.

A general partnership, entered into for an unlimited time, may be put an end to, at any time, by either of the parties, so that he does not break off with some sinister view. It may be dissolved also by the award of arbitrators, by the insanity of one of the firm, or by the gross misconduct of a partner; on which a court of equity may annul the contract.

The death of one partner dissolves the partnership, unless there be an express agreement to transmit the interest in the business to the family of the deceased partner, or his executor, or administrator. It is dissolved also by the bankruptcy, outlawry, or attain for treason or felony of either partner.

If a partnership for a limited time, with a right to dissolve upon giving a year's notice, be continued, without any new agreement after the expiration of the limited time, such new partnership is dissoluble at the will of either party. 17 Vesey 298. The taking, by a partnership, of a lease which is unexpired, or their entering into contracts which are unexecuted, does not deprive either party of his right to dissolve at will. Ibid. If a partnership be formed for carrying into effect a new invention, which, after repeated trials, is found impracticable, it seems that the partnership is dissoluble. Baring, v. Dix, at the Rolls, 1786.

A firm may be bound, after the dissolution of the partnership, by a contract, made by one partner in the name of the firm, with a person who con-

tracted on the fait of the partnership, and had not notice of the dissolution. 1 Esp. 371. It seems that an advertisement in the Gazette is sufficient notice to all persons who had not previous dealings with the house. 3 Esp. 248. But it is necessary, as to all persons with whom the firm had dealings, to send to each notice of the dissolution.

PARTRIDGE, *n. s.* Fr. *perdre*; Wel. *pertris*; Lat. *perdis*; Gr. *περδύς*. A well known species of game bird.

The king is come out to seek a flea, as when one doth hunt a *partridge* in the mountains.

1 Samuel xxvi. 20.

Enough for me

To boast the gentle spar-hawk on my fist,
Or fly the *partridge* from the bristly field,
Relieve the covey with my busy train,
Or with my soaring hobby dare the lark.

Somerville.

This may lead to the right interpretation of Ecclesiasticus xi. 30, which we render 'like as a *partridge* taken (or kept) in a cage, so is the heart of the proud,' but should be 'like a decoy *partridge* in a cage.'

Dr. Shaw.

PARTRIDGE, in ornithology. See **TETRAO**. The places partridges delight in most are corn fields, especially whilst the corn grows; for under that cover they shelter and breed; and they are frequented by them when the corn is cut down, for the grain. In the furrows, amongst the clods, branches, and long grass, they hide both themselves and coveys, which are sometimes twenty in number, nay thirty in a covey. When winter is arrived, and the stubble fields are ploughed up, or over-soiled with cattle, partridges resort into the upland meadows, and lodge in the dead-grass, or fog under hedges, amongst mole-hills, or under the roots of trees; sometimes they resort to coppices and under-woods, especially if any corn-fields are adjacent, or where there is grown broom, brakes, fern, &c. In harvest, when every field is full of men and cattle, in the day they are found in fallow fields adjoining to corn-fields, where they lie lurking till evening or morning, and feed among the sheaves of corn. This bird contributes so much to the pleasures of the table that many experiments were formerly in use to take them alive. Having deceived the timid creatures by a happy imitation of their notes, it was easy to entice them into the snare; but their destruction is now almost entirely reserved for the shot of the sportsman, or the net of the poacher. The partridges of Abyssinia are said to be as large as capons.

PARTURITION, *n. s.* } Lat. *parturio*. The
PARTURIENT, *adj.* } state of being about to bring forth.

Conformation of parts is required, not only under the previous conditions of birth, but also under the *parturition* or very birth.

Browne.

PARTURITION. See **MIDWIFERY**.

PARTY, *n. s.*

PARTY-COLORED, *adj.* } Fr. *partie*. Or from
PARTY-JURY, *n. s.* } PART. An individual
or distinct person; a
side; hence a faction;

a number of persons combined; or the adherents to a cause taken collectively; a military detachment; a select assembly: party-colored means, having various colors: party-jury, a jury half

foreigners and half natives: party-wall, a partition wall between two houses.

The cause of both parties shall come before the judges.

Easday.

As she paced on, she was stopped with a number of tees, so thickly placed together that she was afraid she should, with rushing through, stop the speech of the lamentable party, which she was so desirous to understand.

Sidney.

Men in a party have liberty only for their motto; in reality they are greater slaves than any body else would care to make them.

Beville.

The minister of justice may, for public example, virtuously will the execution of that party, whose pardon another, for compassion's sake, as virtuously may desire.

Hooker.

When you are hearing a matter between party and party, if pinched with the cholic, you make faces like mummers, and dismiss the controversy more entangled by your hearing: all the peace you make in their cause is calling both parties knaves.

Shakespeare.

How shall this be compast? canst thou bring me to the party?

Id. Tempest.

The fulsome ewes,

Then conceiving, did, in yearning time

Fall party-coloured lambs.

Shakespeare.

The child was prisoner to the womb, and is

Freed and enfranchised; not a party to

The anger of the king, nor guilty of

The trespass of the queen.

Id.

The imagination of the party to be cured is not needful to concur; for it may be done without the knowledge of the party wounded.

Bacon.

If the jury found that the party slain was of English race, it had been adjudged felony.

Devies.

The smoke received into the nostril causes the party to lie as if he were drunk.

Abbot.

He that confesses his sin, and prays for pardon, hath punished his fault: and then there is nothing left to be done by the offended party, but to return to charity.

Taylor.

When princes idly lead about,

Those of their party follow suit,

Till others tramp upon their play,

And turn the cards another way.

Butler.

The peace, both parties want, is like to last.

Dryden.

Ægle came in, to make their party good.

Id.

Constrained him in a bird, and made him fly

With party-coloured plumes a chattering pie.

Id.

The leopard was valuing himself upon the lustre of his party-coloured skin.

L' Estrange.

When any of these combatants strips his terms of ambiguity I shall think him a champion for truth, and not the slave of vain glory and a party.

Locke.

'Tis an ill custom among bricklayers to work up a whole story of the party-walls, before they work up the fronts.

Mason.

As he never leads the conversation into the violence and rage of party disputes, I listened to him with pleasure.

Tatler.

Party writers are so sensible of the secret virtue of an innuendo, that they never mention the *q*—a at length.

Spectator.

I looked with as much pleasure upon the little party-coloured assembly, as upon a bed of tulips.

Addison's Spectator.

This account of party patches will appear improper to those who live at a distance from the fashionable world.

Addison.

There is nothing so bad for a face as party zeal. It gives an ill-natured cast to the eyes, and a dis-

agreeable sourness to the look : besides that it makes the hues too strong, and flushes them worse than brandy. *Id.*

If a bishop be a *party* to a suit, and excommunicates his adversary ; such excommunication shall not bar his adversary from his action. *Ayliffe.*

Though there is a real difference between one man and another, yet the *party* who has the advantage usually magnifies the inequality. *Collier.*

Nor is it hard to beautify each month
With files of *party-coloured* fruits. *Philips.*

Let me extol a cat on oysters fed,
I'll have a *party* at the Bedford-head. *Pope.*

Four knaves in garb succinct, a trusty band,
And *party-coloured* troops, a shining train,
Draw forth to combat on the velvet plain. *Id.*

Division between those of the same *party* exposes them to their enemies. *Id.*

There never was any *party*, faction, seat, or cabal whatsoever, in which the most ignorant were not the most violent ; for a bee is not a busier animal than a blockhead. *Id.*

If the clergy would a little study the arts of conversation, they might be welcome at every *party*, where there was the least regard for politeness or good sense. *Swift.*

The most violent *party* men are such, as, in the conduct of their lives, have discovered least sense of religion or morality. *Id.*

PARVIS, *n. s.* Fr. *parvis*. A church or church-porch : applied to the mootings or law-disputes among young students in the inns of courts, and also to that disputation at Oxford called disputation in *parvis*.

PARVITUDE, or } Lat. *parvus*. Little-
PARVITY, *n. s.* } ness ; minuteness. Not used.

The little ones of *parvitude* cannot reach to the same field with them. *Glanville.*

What are these for fineness and *parvity*, to those minute animalcula discovered in pepper-water ? *Rag.*

PARULIDES, in surgery, tumors and inflammations of the gums, commonly called gum-boils. They are to be treated with discutients like other inflammatory tumors.

PARUS, the titmouse, in ornithology, a genus belonging to the order of passeress. The bill is very entire, covered at the basis with hairs ; the tongue is truncated and hairy. There are fourteen species, of which the most remarkable are these :—

1. *P. biarmicus*, the bearded titmouse, has a short, strong, and very convex bill, of box color ; the head of a fine gray ; the chin and throat white ; the middle of the breast flesh-colored ; the sides and thighs of a pale orange ; the hind part of the neck and back of orange bay ; the tail is two inches and three quarters long ; the legs of a deep shining black. The female wants the flesh-color on the breast, and a triangular tuft of black feathers on each side the bill which adorn the male. They are found in marshy places.

2. *P. ceruleus*, the blue titmouse, is a very beautiful bird. The bill is short and dusky ; the crown of the head a fine blue, from the bill to the eyes is a black line ; the forehead and cheek white ; the back of a yellowish green ; the lower side of the body yellow ; the wings and tail blue, the former marked transversely with a

white bar ; the legs of a lead color. They frequent gardens ; and do great injury to fruit trees, by bruising the tender buds in search of the insects which lie under them. They breed in holes of walls, and lay twelve or fourteen eggs.

3. *P. caudatus*, the long-tailed titmouse, is about five inches and a quarter long, and seven inches broad. The bill is black, very thick, and convex, differing from all others of this genus. The top of the head, from the bill to the hind part, is white, mixed with a few dark gray feathers : this bed of white is entirely surrounded with a broad stroke of black ; which, rising on each side of the upper mandible, passes over each eye, unites at the hind part of the head, and continues along the middle of the back to the rump. The feathers on each side of this black stroke are of a purplish red, as are those immediately incumbent on the tail. The tail is the longest, in proportion to the bulk, of any British bird, being in length three inches, the form not unlike that of a magpie, consisting of twelve feathers of unequal lengths, the middle-most the longest, those on each side growing gradually shorter. These birds are often seen passing through our gardens, going from one tree to another, as if in their road to some other place, never making any halt. They make their nests with great elegance, of an oval shape, and about eight inches deep, having near the upper end a hole for admission. The external materials are mosses and lichens curiously interwoven with wool. On the inside it is very warmly lined with a thick bed of feathers. The female lays from ten to seventeen eggs. The young follow their parents the whole winter ; and from the slenderness of their bodies, and great length of tail, appear, while flying, like darts cutting the air.

4. *P. cristatus*, the crested titmouse, weighs thirteen pennyweights ; the bill is black, with a spot of the same color above it ; all the upper part of the body gray ; the neck and under parts are white, with a faint tincture of red, which is deepest just below the wings. The legs are of a lead color. It erects its crown feathers into a crest. They inhabit the warm parts of North America ; and frequent forest-trees, feeding upon insects.

5. *P. major*, the great titmouse, has the head and throat black, the cheeks white, the back green ; the belly yellowish green, divided in the middle by a line of black which extends to the vent ; the rump a bluish gray, the legs of a lead color, the toes divided to the very origin, and the back too very large and strong. This species sometimes visit our gardens ; but for the most part inhabit woods, where they build in hollow trees, laying about ten eggs. They feed on insects, which they find in the bark of trees. In spring, they do a great deal of mischief by picking off the tender buds of the fruit trees. Like woodpeckers, they are perpetually running up and down the bodies of trees in quest of food. These birds have three cheerful notes which they begin to utter in February.

6. *P. pendulinus*, the remiz, or small titmouse. It is often found in Lithuania. Mr. Coxe, in his Travels through Poland, gives the following

account of this little animal:—'They are the smallest species of titmice. The head is of a pale bluish ash color; the fore part of the neck and the breast tinged with red; the belly white; wings black; back and rump of a yellowish rust color; quill feathers cinereous, with the exterior sides white; the tail rust-colored. The male is singularly distinguished from the female by a pair of black pointed whiskers. Its nest is in the shape of a long purse, which it forms with amazing art, by interweaving down, gossamer, and minute fibres, in a close and compact manner, and then lining the inside with down alone, so as to make a snug and warm lodge for its young brood. The entrance is at the side, small, and round, with its edge more strongly marked than the rest of this curious fabric: the bird, attentive to the preservation of its eggs or little ones from noxious animals, suspends it at the lesser end to the extremity of the slender twigs of a willow, or some other tree, over a river. Contrary to the custom of titmice, it lays only four or five eggs: possibly Providence has ordained this scantiness of eggs to the remiz, because, by the singular instinct imparted to it, it is enabled to secure its young much more effectually from destruction than the other species, which are very prolific.'

PARUTA (Paul), a noble Venetian, born in 1540; distinguished for his learning, and knowledge as a statesman. He filled several high offices; was sent on several embassies; was appointed governor of Brescia, and procurator of St. Mark: in all which stations he showed great talent and probity. He wrote, *Notes upon Tacitus*; *Political Discourses*; *A Treatise of the Perfection of the Political Life*; *A History of Venice*, from 1513 to 1572, with the War of Cyprus; all in Italian. He died in 1598.

PARYSATIS, an infamous Persian queen, wife of Darius Nothus, and mother of Artaxerxes Mnemon and Cyrus the younger. Her partiality for Cyrus led her to commit the greatest injustice and barbarities; and she poisoned Statira, the wife of Artaxerxes. See **PERSIA**.

PAS, *n. s.* *Fr. pas*. Precedence; right of going foremost; a Gallicism.

In her poor circumstances, she still preserved the mien of a gentlewoman; when she came into any full assembly, she would not yield the *pas* to the best of them. *Arbuthnot.*

PASARGADA, a town of Persia, near Carmania, founded by Cyrus the Great, on the spot where he conquered Astyages. The kings of Persia were afterwards crowned in it.

PASCAL (Stephen), a French gentleman of an ancient family, born in 1588. He was president of the court of aids in Auvergne; he was a very learned man, an able mathematician, and a friend of Descartes. In 1631 he quitted his office in his province, and went and settled at Paris, that he might be quite at leisure for the instruction of his only son.

PASCAL (Blaise), one of the finest mathematicians France has produced. He was born at Clermont in Auvergne in 1623. His father had kept all mathematical books out of his way, lest they should interrupt his study of the languages; but nevertheless he advanced considerably in

the knowledge of mathematics, without ever hearing a single term. He understood Euclid's Elements as soon as he cast his eyes upon them. At sixteen years of age he wrote *A Treatise on Conic Sections*; and, at nineteen, contrived an admirable arithmetical machine, which would have done credit to any man versed in science. About this time his health became impaired, and he was in consequence obliged to suspend his labors for four years. In his twenty-third year, having seen Torricelli's experiment respecting a vacuum and the weight of the air, he turned his attention towards these objects; and he published the result of a variety of experiments, in two small treatises, the one entitled *A Dissertation on the Equilibrium of Liquors*; and the other, *An Essay on the Weight of the Atmosphere*. These labors procured him so much reputation, that the greatest mathematicians and philosophers of the age consulted him about such difficulties as they could not solve. But his career, though brilliant, was ordained to be but short. His health declined so rapidly that he renounced all severe study, and, in mistaken devotion, inflicted on himself the most severe tortures. He died in Paris 1662, aged thirty-nine years. Besides the works above-mentioned, he wrote *Lettres Provinciales*, satirising the Jesuits, and some religious pieces. His works were collected by Bossu, in 5 vols. 8vo.

PASCHE, *n. s.* } *Fr. pascal*; *Lat. paschalis*.
PAS'CHAL, *adj.* } The passover: relating to the passover: hence relating to Easter.

Neither would God have cast the Christian Easter upon the just time of the Jewish *Pasch*, and their Whitsuntide upon the Jewish Pentecost. *Bp. Hall.*

PAS-DE-CALAIS, DEPARTMENT OF THE, France, is formed out of the former province of Artois, and takes its name from its situation, being near the strait that separates France from England, called the Pas-de-Calais, and by the English the Straits of Dover. The principal place of this prefecture is Arras; it is divided into six arrondissements: Arras, containing 165,864 inhabitants, Bethune 123,247, Boulogne 85,141, Montreuil 75,983, St. Omer 98,274, and St. Pol 78,075; being a total population of 626,584 souls, on an area of 2932 square miles, yielding a territorial revenue of 32,305,000 francs. It is subdivided into forty three cantons and 953 communes, forming part of the sixteenth military division, having a royal court at Douay and a bishopric at Arras, and consisting of four electoral arrondissements which send seven members to the chamber of deputies. This department is bounded on the north-east and east by that of the North, on the south by that of the Somme, and on the west by the ocean.

The surface presents a very flat country, gradually declining from the side of Belgium; there is, however, a chain of small mountains, which, stretching from Abbeville beyond Boulogne, contains the sources of several rivers. The sea-coast is bordered by sandy hills, called the Downs, which are yet uncultivated. The soil is very fruitful, and produces in abundance all sorts of grain, vegetables and fruit for cyder. The artificial meadows are very numerous. The low country presents but little running

water; there are marshes, fens, and some fine meadows, fat pastures, fruitful fields, and turpits. Cattle of all kinds are fed here, and horses of excellent quality. There are but few thickets, and not one forest of any size, on which account the people burn chiefly turf and coal. The vine is not cultivated here; the climate is very variable. The soil is chiefly cultivated with horses, and yields more than sufficient for its inhabitants, producing on an average forty-six francs forty-three centimes from every hectare of arable land. There is much small game; also fresh and salt water fish, asses, milch cows, merino sheep, pigs, and great quantities of poultry. There are quarries of marble, gray paving-stone, flint, lime-stone, pipe-clay, potter's-clay, and sand. At Arras and at Courset there are botanical gardens, and mineral waters of a chalybeate quality at Boulogne.

The manufactures of this department consist of common cloths, caps of thread, cotton and wool, cotton velvet, lace, soap, bright iron goods, plate-iron, candles, gingerbread, fishing-nets, and baskets. There are linen and cotton spinning-factories, numerous oil-mills, sugar and salt refining-houses, brandy and hollands distilleries, forges, powder-mills, bleaching grounds, starch manufactories, paper-mills, bark-mills, and considerable tan-yards. A great trade is carried on in grain, wine, brandy, oil, honey, salt, cattle, linen, lace, thread, leather, earthenware for the colonies, coal, &c. There are also cod, herring, and mackerel fisheries, and a coasting trade. This country is watered by the Lys, the Scarpe, the Canche, the Aa, the Auty, the Lave, and other rivers and rivulets; the canals of Calais, St. Omer, Ardres, and Marck, intersect it, and it is crossed by the great roads of Mons, Lille, Dunkirk, Montreuil, Abbeville, and St. Quentin.

PASH, *n. s.* Span. *paz*, a kiss; Scot. *push*, the head. A face.

Thou want'st a rough *push*, and the shoots that I have,

To be full like me. *Shakespeare. Winter's Tale.*

PASH, *v. a.* Lat. *pango*. To strike; crush.

With my armed fist

I'll *push* him o'er the face. *Shakespeare.*

Thy cunning engines have with labour raised

My heavy hanger, like a mighty weight,

To fall and *push* thee dead. *Dryden.*

PASIPHAE, in fabulous history, daughter of Apollo, by Perseis, and wife of Minos, king of Crete, and mother of the Minotaur. See **DÆDALUS**, **MINOS**, and **MINOTAUR**.

PASOR (Matthias), a learned German divine of the seventeenth century, born at Herborne, in Westphalia. He became professor of divinity at Groningen, and afterwards of mathematics at Heidelberg. On the invasion of the Palatinate he came over to England, and read lectures at Oxford on Hebrew and mathematics; and was afterwards appointed professor of oriental languages in that university. He died in 1658.

PASQUIER (Stephen), a learned French lawyer, poet, and historian, born in Paris in 1528. He became an advocate in parliament, afterwards counsellor, and at last advocate general, under Henry III., all of which stations he

filled with ability and reputation. His works, which were published together, consist of Letters, Enquiries, Poems, Portraits, Epigrams, Epitaphs, &c. His poem entitled *Puce*, occasioned by his observing a flea on the breast of the learned Catharine De Roches, excited considerable attention. He died in Paris, August 31st, 1615, aged eighty-seven.

PASQUIL, *n. s.* } From Ital. *pasquino*, a
PASQUIN, } statue at Rome, to which
PASQUINADE. } they affix any lampoon or
satirical paper. A lampoon.

He never valued any *pasquils* that were dropped up and down, to think them worthy of his revenge.

Howel.

The *pasquils*, lampoons, and libels, we meet with now-a-days, are a sort of playing with the four-and-twenty letters, without sense, truth, or wit. *Tatler.*

PASQUIN (*pasquino*, Italian). By this name is designated a group, or rather a torso, in white marble, now in a corner of the Ursini palace in Rome, and which has been regarded by some as the figure of a wrestler, by others as that of Mars, or some earthly warrior, by others again as a gladiator, &c. M. de Ramdohr, in considering the merits of this relic of ancient art, observes that its very mutilated state prevents the connoisseur from arriving at any satisfactory conclusion respecting them. He himself seems to be of opinion that it is the representation of a warrior carrying from the scene of battle his wounded comrade.

The history of this sculpture is remarkable enough. It derives its present name from an Italian cobbler, so called, who lived in Rome, and was notorious for the bitterness of his gibes and the raciness of his jokes. His shop became, consequently, the rendezvous for a quantity of splenetic and idle persons, who diverted themselves by bantering all the passers by.

After Pasquin's decease, in digging the pavement up in front of his shop or stall, the fragments of a statue were exhumed, well chiseled; but, as has been already observed, maimed and half spoiled.

To this statue, by common consent, was affixed the name of the jocular cobbler, in the neighbourhood of whose nest it was discovered, and immediately set up on the same spot; and from that time and circumstance arose the well known term of *pasquinade*, all lampoons and satires having been, in Rome, ascribed to this figure, being put in its mouth or pasted against it as if the bonâ fide lucubrations of Pasquin rediivus. The usual method is, to make Pasquin address himself to Marforio (another statue in the same town) or the latter to Pasquin, who never fails to make reply, the one being often made to assist the other, when either is assailed.

PASS, *v. n., v. a. & n. s.* } Fr. *passer*; Ital.
PASSABLE, *adj.* } *passare*; Span. and
PASSAGE, *n. s.* } Port. *passar*; of
PASSER, } Lat. *passus*, a step.
PASSENGER, *n. s.* } To move progres-
PASSIBLE, *adj.* } sively or from step
PASSIBLENESS, *n. s.* } to step; go; change
PASSING, *part. & adj.* } by regular grada-
PASSING-BELL. } tion; go through
regular stages or vessels of the body; go away;

omit; vanish; die; be lost; be spent; be at an end or crisis: progress to or beyond the final stage: hence to be enacted, as a bill in parliament; be effected; be determined; be supremely excellent; become current; be practised shrewdly or artfully; occur; heed or regard (obsolete); thrust; be in a tolerable state: taking 'away' (intens.) when it signifies to be completely lost; vanish or glide off: as an active verb, to go beyond or through; hence surpass or excel; spend; live through; carry over; transfer; strain (a liquid); pronounce; admit or allow; enact; impose or practise upon: 'to pass away' is, to spend or waste: 'pass by, excuse or forgive; also neglect; disregard: 'to pass over' is, to omit; leave unregarded: a pass is an entrance or avenue; road; order or permission to travel or to go from place to place; a push or thrust; state arrived at; condition or disposition: passable is, that can be passed or travelled through or over; tolerable; popular: passible is, impassible: passage, the act or course of passing; journey; voyage; road or way; avenue; state of decay; occurrence or hap (obsolete in both these last senses); aptness to pass; unsettled state; incident; conduct; single part or plan of a book or writing: a passer is, he who passes, or is upon a road: passenger, a traveller; wayfarer; one who passes: passing is, supreme; eminent; exceeding: passing-bell, a bell rung to obtain prayers for a passing or dying soul; also the bell rung immediately after a death.

If I have found favour in thy sight, *pass not away* from thy servant.

This heap and this pillar be witness, that I will not *pass over* to thee, and that thou shalt not *pass over* it and this pillar unto me for harm.

While my glory *passeth by*, I will put thee in a cleft of the rock, and will cover thee, while I *pass by*.

Ecclesiastes xxxiii. 22.

The money of every one that *passeth* the account, let the priests take.

2 Kings xii. 4.

Why sayest thou, My way is hid from the Lord, and my judgment is *passed over* from my God?

Isaiah xl. 27.

Whom do'st thou *pass* in beauty?

Ezekiel.

Thus will I cut off him that *passeth out*, and him that returneth.

Id. xxxv. 7.

The father waketh for the daughter, lest she *pass away* the flower of her age.

Ecclesiastes xlii. 9.

Antiochus departed in all haste, weening in his pride to make the land navigable, and the sea *passable* by foot.

2 Maccabees.

To what a *pass* are our minds brought, that from the right line of virtue, are wryed to these crooked shifts?

Sidney.

The diligent pilot in a dangerous tempest doth attend the unskilful words of a *passenger*.

Id.

She, more sweet than any bird on bough,

Would oftentimes amongst them bear a part,

And strive to *pass*, as she could well enough,

Their native music by her skilful art.

Spenser.

They shall protect all that come in, and send them to the lord deputy, with their safe-conduct or *pass*, to be at his disposition.

Id. on Ireland.

I have heard it enquired, how it might be brought to *pass* that the church should every where have able preachers to instruct the people.

Hooker.

Theodoret disputeth with great earnestness, that God cannot be said to suffer; but he thereby meaneth Christ's divine nature against Apollinarius, which held even deity itself *passible*.

Id.

It drew after it the bareness of the *passibility* of the deity; the deity of Christ was become, in their conceits, the same nature with the humanity that was *possible*.

Everaard.

The pangs of death do make him grin;

Disturb him not, let him *pass* peaceably.

Shakespeare.

Why this *passes*, Mr. Ford:—you are not to go loose any longer, you must be pinioned.

Id.

Tell him his long trouble in *passing*

Out of this world.

Id. Henry VIII.

This practice hath most shrewdly *pass* upon thee; But, when we know the grounds and authors of it, Thou shalt be both the plaintiff and the judge.

Shakespeare.

As for these silken-coated slaves, I *pass* not,

It is to you, good people, that I speak,

O'er whom, in time to come, I *hope* to reign.

Id.

Though well we may not *pass* upon his life,

Without the form of justice; yet our power

Shall do a court'sy to our wrath.

Id.

This night

We'll *pass* the business privately and well.

Id.

To see thee fight, to see thee *pass* thy puncto.

Id.

Let me o'erleap that custom; for I cannot Put on the gown, stand naked, and entreat them; Please you that I may *pass* this doing.

Id.

We bid this be done,

When evil deeds have their permissive *pass*,

And not the punishment.

Id.

'Tis dangerous when the baser nature comes

Between the *pass* and fell incensed points

Of mighty opposites.

Id. Hamlet.

The king hath laid, that in a dozen *passes* between you and him, he shall not exceed you three hits.

Shakespeare.

His body is a *passable* carcase, if he be not hurt.

It is a thoroughfare for steel.

What, are my doors opposed against my *passage*?

Id.

Would some part of my young years

Might but redeem the *passage* of your age!

Id.

It is no act of common *passage*, but

A strain of rareness.

Id.

Thou do'st in thy *passages* of life

Make me believe that thou art only marked

For the hot vengeance of heaven.

Id.

What hollowing, and what stir is this?

These are my mates that make their wills their law,

Have some unhappy *passenger* in chase.

Id.

Oberon is *passing* fell and wroth.

Id.

The Tyrians had no *pass* to the Red Sea, but through the territory of Solomon, and by his sufferance.

Raleigh.

The story of such a *passage* was true, and Jason, with the rest, went indeed to rob Colchos, to which they might arrive by boat.

Raleigh's History.

When the case required dissimulation, if they used it, it came to *pass* that the former opinion of their good faith made them almost invisible.

Beacon.

They speak of severing wine from water, *passing* it through ivy wood.

Id. Natural History.

How far ought this enterprize to wait upon these other matters, to be mingled with them, or to *pass by* them, and give law to them, as inferior unto itself?

Beacon.

Where there is no eminent odds in sufficiency, it is better to take with the more *passable*, than with the more able.

Id.

Human actions are so uncertain, as that seemeth the best course which hath most *passages* out of it.

Id.

The land enterprize of Panama was grounded upon a false account, that the *passages* towards it were no better fortified than Drake had left them. *Id.*

After king Henry united the roses, they laboured to reduce both English and Irish, which work, to what *pass* and perfection it was brought in queen Elizabeth's reign, hath been declared.

Davies's State of Ireland.

Upon consideration of the conduct and *passage* of affairs in former times, the state of England ought to be cleared of an imputation cast upon it. *Davies.*

As it is advantageable to a physician to be called to the cure of a declining disease, so it is for a commander to suppress a sedition which has *passed* the height; for, in both, the noxious humour doth first weaken, and afterwards waste to nothing.

Hayward.

This business, as it is a very high *passage* of state, so it is worthy of serious consideration. *Id.*

Those loving papers

Thicken on you now, as prayers ascend
To heaven in troops at a good man's *passing* bell.

Donne.

No strength of arms shall win this noble fort,
Or shake this puissant wall, such *passing* might
Have spells and charms, if they be said aright.

Fairfax.

My friends remembered me of home; and said,
If ever fate would signe my *pass*, delay
It should be now no more. *Chapman.*

In my feare of hospitable Jove,

Thou did'st to this *pass* my affections move. *Id.*

You shall furnish me

With cloake, and coate, and make my *passage* free
For loved Dulichia. *Id.*

Passing many know it; and so many,

That of all nations there abides not any,
From where the morning rises, and the sun,
To where even and night their courses run! *Id.*

Martial, thou gavest far nobler epigrams
To thy Domitian, than I can my James;
But in my royal subject I *pass* thee,
Thou flatter'dst thine, mine cannot flattered be.

Ben Jonson.

Under you ride the home and foreign shipping in
so near a distance, that, without troubling the *passer*,
or borrowing Stentor's voice, you may confer with
any in the town. *Carew.*

He that will *pass* his land,

As I have mine, may set his hand
And heart unto this deed, when he hath read;
And make the purchase spread. *Herbert.*

The last doubt, touching the *possibility* of the matter
of the heavens, is drawn from the eclipses of the
sun and moon. *Hakewill.*

A talk of tumult, and a breath,

Would serve him as his *passing* bell to death.

Daniel.

I would render this treatise intelligible to every
rational man, however little versed in scholastick
learning, among whom I expect it will have a fairer
passage than among those deeply imbued with other
principles. *Digby.*

It conduces much to our content, if we *pass* by
those things which happen to our trouble, and con-
sider that which is prosperous; that, by the repre-
sentation of the better, the worse may be blotted out.

Taylor's Holy Living.

Zeal may be let loose in matters of direct duty, as
in prayers, provided that no indirect act *pass* upon
them to defile them. *Taylor.*

They are crafty, and of a *passable* reach of under-
standing. *Howel.*

Many of the nobility spoke in parliament against
those things which were most grateful to his majesty,

and which still *passed*, notwithstanding their contra-
diction. *Clarendon.*

Many of the lords, and some of the commons,
passed some compliments to the two lords. *Id.*

Waller *passed* over five thousand horse and foot by
Newbridge. *Id.*

It would be easy to defend the *passes* into the
whole country, that the king's army should never be
able to enter. *Id.*

A gentleman had a *pass* to go beyond the seas.

Id.

So shalt thou best prepared endure

Thy mortal *passage* when it comes. *Milton.*

Against which opened from beneath

A *passage* down to the earth, a *passage* wide. *Id.*

The nodding horror of whose shady brows

Threats the forlorn and wandering *passenger*. *Id.*

Many in each region *passing* fair

As the noon sky; more like to goddesses

Than mortal creatures. *Id. Paradise Lost.*

That trick, said she, will not *pass* twice.

Hudibras.

All have liberty to take fish, which they do by
standing in the water by the holes, and so intercept-
ing their *passage* take great plenty of them, which
otherwise would follow the water under ground.

Browne's Travels.

To bleed to death was one of the most desirable
passages out of this world. *Fell.*

However God may *pass* by single sinners in this
world, yet, when a nation combines against him,
the wicked shall not go unpunished. *Tillotson.*

Others, dissatisfied with what they have, and not
trusting to those innocent ways of getting more, fall
to others, and *pass* from just to unjust. *Temple.*

Traders in Ireland are but factors; the cause must
be rather an ill opinion of security than of gain: the
last intices the poorer traders, young beginners, or
those of *passage*; but, without the first, the rich will
never settle in the country. *Id.*

When the *passage* is open, land will be turned
most to great cattle; when shut, to sheep. *Id.*

Her face, her hands were torn

With *passing* through the brakes. *Dryden.*

Trust not too much to that enchanting face;
Beauty's a charm, but soon the charm will *pass*.

Id.

Their excellencies will not *pass* for such in the
opinion of the learned, but only as things which
have less of error in them. *Id.*

Both advance

Against each other, and with sword and lance
They lash; they foin, they *pass*, they strive to bore
Their corslets. *Id.*

You know in what deluding joys we *pass*

The night that was by heaven decreed our last.

Id.

I *pass* their warlike pomp, their proud array. *Id.*

Among the laws that *passed*, it was decreed,
That conquered Thebes from bondage should be
freed. *Id.*

Better to *pass* him o'er, than to relate

The cause I have your mighty sire to hate. *Id.*

Pity tempts the *pass*;

But the tough metal of my heart resists. *Id.*

Lay by Virgil, my version will appear a *passable*
beauty when the original muse is absent. *Id.*

The *passage* made by many a winding way,
Reached e'en the room in which the tyrant lay.

Id.

Apelles, when he had finished any work, exposed
it to the sight of all *passengers*, and concealed himself
to hear the censure of his faults. *Id.*

She was not only *passing* fair,

But was withal discreet and debonnaire. *Id.*

Though frauds may pass upon men, they are as open as the light to him that searcheth the heart.

L'Estrange.

A middling sort of man was left well enough to pass by his father, but could never think he had enough, so long as any had more.

Id.

He passed his promise, and was as good as his word.

Id.

Time lays open frauds, and after that discovery there is no passing the same trick upon the mice.

Id.

I could see plate, hangings, and paintings about my house till you had the ordering of me, but I am now brought to such pass, that I can see nothing at all.

Id.

In counterfeits, it is with men as with false money; one piece is more or less passable than another.

Id.

An idea of motion not passing on, is not better than idea of motion at rest.

Locke.

We see, that one who fixes his thoughts very intently on one thing, so as to take but little notice of the succession of ideas that pass in his mind, whilst he is taken up with that earnest contemplation, lets slip out of his account a good part of that duration, and thinks that time shorter than it is.

Id.

Defining the soul to be a substance that always thinks, can serve but to make many men suspect that they have no souls at all, since they find a good part of their lives pass away without thinking.

Id.

They did pass those bounds, and did return since that time.

Burnet's Theory of the Earth.

Certain passages of Scripture we cannot, without injury to truth, pass by here in silence.

Burnet.

How does that man know, but the decree may be already passed against him, and his allowance of mercy spent?

South.

Truth is a strong hold fortified by God and nature, and diligence is properly the understanding's laying siege to it; so that it must be perpetually observing all the avenues and passes to it, and accordingly making its approaches.

Id.

Matters have been brought to this pass, that if one among a man's sons had any blemish, he laid him aside for the ministry, and such an one was presently approved.

Id.

The Persian army had advanced into the straight passages of Cilicia, by which means Alexander with his small army was able to fight and conquer them.

Id.

Have we so soon forgot,

When, like a matron, butchered by her sons,
And cast beside some common way a spectacle
Of horror and affright to passers by,
Our groaning country bled at every vein? *Rouse.*

The people, free from cares serene and gay,
Pass all their mild untroubled hours away.

Addison.

I had only time to pass my eye over the medals, which are great in number.

Id. on Italy.

I wish for the wings of an eagle, to fly away to those happy seats; but the genius told me there was no passage to them, except through the gates of death.

Addison.

A critick who has no taste nor learning seldom ventures to praise any passage in an author who has not been before received by the publick.

Id.

He affirmed that no good law passed since king William's accession, except the act for preserving the game.

Id.

Full soon by bonfire and by bell,
We learnt our liege was passing well.

Gay.

Full piteous seems young Alma's case,
As in a luckless gamester's place,
She would not play, yet must not pass.

Prior.

Were I not assured he was removed to advantage, I should pass my time extremely ill without him.

Collier.

These stage advocates are not only without truth, but without colour; could they have made the slander passable, we should have heard farther.

Id.

He rejected the authority of councils, and so do all the reformed; so that this wont pass for a fault in him, till 'tis proved one in us.

Atterbury.

Live like those who look upon themselves as being only on their passage through this state, but as belonging to that which is to come.

Id.

Inflammations are translated from other parts to the lungs; a pleurisy easily passeth into a peripneumony.

Arbutnot.

Substances hard cannot be dissolved, but they will pass; but such, whose tenacity exceeds the powers of digestion, will neither pass, nor be converted into aliment.

Id.

When the gravel is separated from the kidney, oily substances relax the passages.

Id.

Dr. Thurston thinks the principal use of inspiration to be, to move, or pass the blood, from the right to the left ventricle of the heart.

Derham.

If the cause be visible, we stop at the instrument, and seldom pass on to him that directed it.

Wake's Preparation for Death.

Though the passage be troublesome, yet it is secure, and shall in a little time bring us ease and peace at the last.

Wake.

False eloquence passeth only where true is not understood, and no body will commend bad writers, that is acquainted with good.

Felton on the Classics.

Heedless of those cares, with anguish stung,
He felt their fleeces as they passed along.

Pope.

In man the judgment shoots at flying game;
A bird of passage! lost as soon as found;
Now in the moon perhaps, now under ground.

Id.

As to the cantos, all the passages are as fabulous as the vision at the beginning.

Id.

Neither of these bills have yet passed the house of commons, and some think they may be rejected.

Swift.

The grossest suppositions pass upon them, that the wild Irish were taken in toys; but that, in some time, they would grow tame.

Id.

Could the same parliament, which addressed with so much zeal and earnestness against this evil, pass it into a law?

Id.

Before the passing-bell begun,

The news through half the town has run.

Id.

The queen asked him, who he was; but he passes over this without any reply, and reserves the greatest part of his story to a time of more leisure.

Broom.

If we would judge of the nature of spirits, we must have recourse to our own consciousness of what passes within our own mind.

Watts.

How many thousands take upon them to pass their censures on the personal actions of others, and pronounce boldly on the affairs of the publick?

Id.

It does not belong to this place to have that point debated, nor will it hinder our pursuit to pass it over in silence.

Id.

How commentators each dark passage shun,
And hold their farthing candle to the sun.

Young.

In souls prepared, the passage is a breath
From time to eternity, from life to death.

Harte.

Sir Hudibras's passing worth,
The manner how he sallied forth.

Underwood.

Green as the bay tree, ever green,
With its new foliage on,

The gay, the thoughtless, have I seen,
I passed—and they were gone.

Cowper.

Time moveth not!—our being 'tis that moves:
And we, swift gliding down life's rapid stream,
Dream of swift ages and revolving years,
Ordn'd to chronicle our passing days.

Kirke White.

PASSADE, in the manege, is a turn or course of a horse backwards or forwards on the same spot of ground. Hence there are several sorts of passades, according to the different ways of turning, in order to part or return upon the same tread, which is called closing the passade; as the passade of one time, the passade of five times, and the raised or high passades, into which the demivolts are made into curvets.

PASSA'DO, *n. s.* Italian. A push; a thrust.

A duellist, a gentleman of the very first house;
ah! the immortal *passade*.
Shakespeare.

PASSADO, **PASS**, or **PASSADE**, in fencing, an advance or leap forward upon the enemy. Of these there are several kinds; as passes within, above, beneath, to the right, the left, and passes under the line, &c. The measure of the pass is when the swords are so near as that they may touch one another.

PASSAGE, **RIGHT OF**, in commerce, is a duty exacted by some princes, either by land or sea, in certain close and narrow places in their territories, on all vessels and carriages, and even sometimes on persons or passengers, coming in or going out of ports, &c. The most celebrated passage of this kind in Europe is the Sound; The dues for passing which strait belong to the king of Denmark, and are paid at Elsinore or Cronenburg.

PASSAIC, a river of New Jersey, which flows south into Newark Bay. It is navigable ten miles for small vessels. At Paterson this river has a fall of sixty or seventy feet: perpendicular, presenting a scene of singular beauty and grandeur. It is much visited as a natural curiosity.

PASSAMAQUODDY BAY, a bay of North America, which forms a part of the boundary between Maine and New Brunswick. It is about six miles from north to south, and twelve from east to west. It contains a number of islands, as Campo Bello, Deer, Mouse, Dudley, Frederick, &c.

PASSAMAN, a province in the north of the island of Sumatra, formerly part of the kingdom of Achin. It is subdivided into other provinces, and was once a place of great trade in gold and pepper. It is nearly under the equinoctial line.

PASSANT, in heraldry, a term applied to a lion or other animal in a shield, appearing to walk leisurely; for most beasts, except lions, the trippant is frequently used instead of passant.

PASSARON, in ancient geography, a town of Epirus, where, after sacrificing to Jupiter, the kings swore to govern according to law, and the people to obey and defend the country.

PASSAU, a considerable town of Bavaria, at the confluence of the Inn and Danube, was formerly the capital of a bishopric, and is still a bishop's see, and the chief town of the circle of the Lower Danube. The Inn here is full as large, if not larger than the Danube, and the

two rivers divide the town into three parts, Passau Proper, situated on the peninsula between them; the Innstadt, standing on the south side of the Inn; and the Ilzstadt, on the north side of the Danube. The three parts are connected by two long wooden bridges. The fortifications are of considerable strength, and include three large forts. Passau Proper contains several fine public edifices, such as the cathedral, the bishop's palace, and the gymnasium, originally the Jesuits' College. The Ilzstadt is inhabited chiefly by fishermen and laborers. The Innstadt is somewhat better. Passau has a tobacco manufactory, some large breweries, and, from its command of river navigation, a tolerable general trade. Here was concluded, in 1552, the famous peace of Passau, considered by the German Protestants as the charter of their liberties: in 1652 the greatest part of the town was burnt down; and in 1800, 1805, and 1809, it suffered greatly from military contributions, and the passage of troops. Population of the whole place 10,000. Eighty-six miles E. N. E. of Munich, and 138 west by north of Vienna.

The bishopric of Passau formerly comprised a track of country between Bavaria, Bohemia, and Upper Austria, of 470 square miles superficial extent; population 60,000. It was secularised in 1803; and since 1815 the part lying west of the Inn belongs to Bavaria, and the rest to Austria.

PASSERAT (John), a celebrated professor of eloquence in the royal college of Paris, and one of the most elegant writers of his time, was born at Troyes, in Champagne, in 1534. He studied the law under the famous Cujacius at Bourges, where he became professor of eloquence in 1572. He was an indefatigable student, and gained the esteem of Charles IX., Henry III., and all the men of wit and learning in his time. He died in 1602, and left several admired works behind him.

PASSERES, in ornithology, the sixth order of birds according to the Linnæan system, are distinguished by a conical and pointed bill; the nostrils are oval, pervious, and naked; the legs are formed for hopping; the toes are slender, and divided; the bodies of those that feed on grain are pure, but of those that feed on insects impure; the nest is formed with much art. They live chiefly in trees and hedges, are monogamous, and feed their young by thrusting the food down their throats. This order includes all the singing birds; the males are the songsters. They are divided into four sections, see **ORNITHOLOGIST**, and include the following genera.

Sect. I.

Colius.
Emberiza.
Fringilla.
Loxia.
Phytotoma.

Sect. III.

Ampelis.
Muscicapa.
Tanagra.
Turdus.

Sect. II.

Caprimulgus.
Pipra.
Hirundo.

Sect. IV.

Alauda.
Columba.
Motacilla.
Parus.
Sturnus.

PASSERI (John Baptist), a learned antiquary and philologist, born at Gubio in Urbino, in 1694. Having entered into orders he became apostolic protonotary and vicar general of Pesara. He published many books, particularly *Picture Etruscorum in Vasculis, nunc primum in unum collectæ, explicationibus et dissertationibus illustratæ*, Rome, 1767, 3 tom. fol. Being overturned in his carriage, he received a bruise of which he died in 1780.

PASSERI (John Baptist), a painter and poet of Italy, born in 1609. He was a disciple of Dominichino, but had more merit as an author than as a painter. He wrote the *Lives of the Painters, Sculptors, and Architects*, of his own time. He died at Rome in 1679, aged seventy.

PASSIENUS (Paulus), a Roman knight, nephew of the poet Propertius, whose elegiac poetry he imitated. He also attempted Lyric poetry with success.

PASSIFLORA, the passion-flower; a genus of the pentandria order and gynandria class of plants; natural order thirty-fourth, cucurbitaceæ: CAL. pentaphyllous; petals five; the nectarium a crown; the berry is pedicellated. There are nearly thirty different species; all natives of warm foreign countries, only one of which is sufficiently hardy to succeed well in the open ground here; all the others requiring the shelter of a green-house or stove, but chiefly the latter. The most remarkable are:—

1. *P. cærulea*, the blue-rayed common palmated passion-flower, has long, slender, shrubby, purplish-green stalks, branchy, and ascending, upon support by their claspers, thirty or forty feet high; with one large palmated leaf at each joint, and at the axillas large spreading flowers, with whitish-green petals, and a blue radiated nectarium; succeeded by a large, oval, yellowish fruit. It flowers from July until October; the flowers are very large, conspicuous, and their composition is exceedingly curious and beautiful. They come out at the axillas on pedunculi about three inches long, which they terminate, each flower having, just close under the calyx, a three-lobed involucre-like appendage; a five-lobed calyx, and a five-petalous corolla, the size, figure, and color of the calyx, &c., the petals arranging alternately with the calycinal lobes; and within the corolla is the nectarium, composed of a multitude of thread-like fibres, of a blue and purple color, disposed in circular rays round the column of the fructification; the outer ray is the longest, flat, and spreading on the petals: the inner is short, erect, and narrows towards the centre; in the middle is an erect cylindric club-shaped column or pillar, crowned with the roundish germen, having at its base five horizontal spreading filaments, crowned with incumbent yellow antheræ, and that move about every way; and from the side of the germen arise three slender spreading styles, terminated by headed stigmas; the green afterwards gradually becomes a large oval fleshy fruit, ripening to a yellowish color. These wonderful flowers are only of one day's duration, generally opening about 11 or 12 o'clock, and frequently in hot sunny weather burst open with elasticity, and continue fully expanded all that day; and the

next they gradually close, assuming a decayed-like appearance, and never open any more; the evening puts a period to their existence, but they are succeeded by new ones daily on the same plant. This plant and flowers are held in great veneration in some foreign Catholic countries, where the religious make the leaves, tendrils, and different parts of the flower, to represent the instruments of our blessed Saviour's passion; hence the name *passiflora*.

2. *P. incarnata*, the incarnated, or flesh-colored Italian passion flower, has a strong perennial root; slender, herbaceous stalks, rising, upon support, four or five feet high; leaves composed of three sawed lobes, each leaf attended by a twining tendril; and at the axillas long slender pedunculi, terminated each by one whitish flower, having a greenish calyx, and a reddish or purple radiated nectarium, surrounding the column of the fructification, which succeed to a large, round, fleshy fruit, ripening to a beautiful orange-color. The flowers of this species are also very beautiful, though of short duration, opening in the morning and night puts a period to their beauty; but they are succeeded by a daily supply of new ones. The fruit of this sort is also very ornamental, as ripening to a fine reddish orange-color; but these rarely attain perfection here, unless the plants are placed in the stove; therefore, when there is such accommodation, it highly merits that indulgence, where it will exhibit both flowers and green and ripe fruit; all at the same time in a beautiful manner.

3. *P. vespertilio*, the bat's wing passion-flower, has slender, striated, branchy stalks; large, bilobate, or two-lobed leaves, the base roundish and glandular, the lobes acute, widely divaricated like a bat's wings, and dotted underneath; the axillary flowers having white petals and rays. The leaves of this species have a singular appearance, the two lobes being expanded six or seven inches, resembling the wings of a bat upon flight; hence the name *vespertilio*. All the species in this country are of a tender quality, except the first, which succeeds very well in the full ground, in a warm situation; only their young branches are sometimes killed in very severe winters; but plenty of new ones generally rise again in spring following: the others denominated stove kinds, must always be retained in that repository.

PASSINELLI (Laurence), an eminent historical painter, born in 1629, at Bologna; in which city there are some of his best pieces. He died in 1700, aged seventy-one.

PAS'SION, *n. s. & v. n.* } Fr. and Span. *pas-*
PAS'SIONATE, *adj. & v. a.* } sion; Ital. *passione*;
PAS'SIONATELY, *adv.* } Lat. *passio*. An ef-
PAS'SIONATENESS, *n. s.* } fect produced by ex-
PAS'SION-WEEK. } ternal agency; suscep-

tibility of such effect, particularly mental susceptibility; emotion or commotion of mind; eagerness; a particular kind of mental emotion, as anger, zeal, &c. Used emphatically, in theology, for the last sufferings of the Redeemer of mankind: hence the compound, *passion-week*, the week in which his sufferings have been commemorated: to passion is used by Shakespeare

for to be agitated extremely: passionate is, moved, or apt to be moved, by passion; soon angry: to passionate, to affect with or to express passion: passionately and passionateness follow the senses of passionate.

He shewed himself alive after his *passion*, by many infallible proofs. *Acts i. 3.*

Great pleasure, mixed with pitiful regard,
That godly king and queen did *passionate*,
Whilst they his pitiful adventures heard,
That oft they did lament his luckless state.

Spenser.

My whole endeavour is to resolve the conscience, and to shew what, in this controversy, the heart is to think, if it will follow the light of sound and sincere judgment, without either cloud of prejudice or mist of *passionate* affection. *Hooker.*

All the other *passions* fleet to air,
As doubtful thoughts and rash embraced despair.

Shakespeare.

I am doubtful, lest
You break into some merry *passion*,
And so offend him:
If you should smile, he grows impatient. *Id.*

'Twas Ariadne *passioning*
For Theseus' perjury and unjust fight. *Id.*

Thy niece and I want hands,
And cannot *passionate* our tenfold grief
With folded arms. *Id. Titus Andronicus.*

The differences of mouldable and not mouldable, scissible and not scissible, and many other *passions* of matter, are plebeian notions, applied to the instruments men ordinarily practise. *Bacon.*

Envy is a gadding *passion*, and walketh the streets, and doth not keep at home. *Id.*

Thucydides observes that men are much more *passionate* for injustice than for violence; because the one, coming as from an equal, seems rapine; when the other, proceeding from one stronger, is but the effect of necessity. *Clarendon.*

In his prayers, as his attention was firm and steady, so was it inflamed with *passionate* fervors. *Fell.*

To love with some *passionateness* the person you would marry is not only allowable but expedient. *Boyle.*

Passion's too fierce to be in fetters bound,
And nature flies him like enchanted ground.

Dryden.

I made Meleaginda, in opposition to Nourmahal, a woman *passionately* loving of her husband, patient of injuries and contempt, and constant in her kindness. *Id.*

For your love,
You killed her father: you confessed you drew
A mighty argument to prove your *passion* for the daughter. *Id. and Lee's Oedipus.*

Whoever *passionately* covets any thing he has not, has lost his hold. *L'Etrange.*

A body at rest affords us no idea of any active power to move, and, when set in motion, it is rather a *passion* than an action in it. *Locke.*

They lay the blame on the poor little ones sometimes *passionately* enough, to divert it from themselves. *Id.*

Good angels looked upon this ship of Noah's with a *passionate* concern for its safety. *Burnat.*

If sorrow expresses itself never so loudly and *passionately*, and discharges itself in never so many tears, yet it will no more purge a man's heart, than the washing of his hands can cleanse the rottenness of his bones. *South's Sermons.*

He, to grate me more,
Publickly owned his *passion* for Amestris.

Race.

Where statesmen are ruled by faction and interest, they can have no *passion* for the glory of their country, nor any concern for the figure it will make.

Addison on Medals.

Homer's Achilles is haughty and *passionate*, impatient of any restraint by laws, and arrogant in arms. *Prior.*

Men, upon the near approach of death, have been roused up into such a lively sense of their guilt, such a *passionate* degree of concern and remorse, that, if ten thousand ghosts had appeared to them, they scarce could have had a fuller conviction of their danger. *Atterbury.*

Survey yourself, and then forgive your slave,
Think what a *passion* such a form must have.

Grenville.

Abate a little of that violent *passion* for fine cloaths, so predominant in your sex. *Swift.*

The word *passion* signifies the receiving any action, in a large philosophical sense; in a more limited philosophical sense, it signifies any of the affections of human nature; as love, fear, joy, sorrow: but the common people confine it only to anger. *Watts.*

Would a man know himself, he must study his natural temper; his constitutional inclinations and favourite *passions*. *Mason.*

Self-knowledge will be a good ballast to the mind under any accidental hurry or disorder of the *passions*. *Id.*

O Liberty! the prisoner's pleasing dream,
The poet's Muse, his *passion*, and his theme;
Genius is thine, and thou art Fancy's nurse.

Cowper.

Hence all that is in man, pride, *passion*, art,
Powers of the mind, and feelings of the heart,
Insenible of Truth's almighty charms,
Starts at her first approach, and sounds to arms!

Id.

But from his visage little could we guess,
So unrepentant, dark, and *passionless*,
Save that when struggling nearer to his last,
Upon that page his eye was kindly cast. *Byron.*

PASSION is a word of which, as Dr. Reid observes, the meaning is not precisely ascertained, either in common discourse or in the writings of philosophers. In its original import it denotes every feeling of the mind occasioned by an extrinsic cause; but it is generally used to signify some agitation of mind, opposed to that state of tranquillity in which a man is most master of himself. That it was thus used by the Greeks and Romans is evident from Cicero's rendering *παθος*, the word by which the philosophers of Greece expressed it, by *perturbatio* in Latin. In this sense of the word, *passion* cannot be itself a distinct and independent principle of action; but only an occasional degree of vehemence given to those dispositions, desires, and affections, which are at all times present to the mind of man; and that this is its proper sense, we need no other proof, than that *passion* has always been conceived to bear analogy to a storm at sea, or to a tempest in the air. With respect to the number of *passions* of which the mind is susceptible, different opinions have been held by different authors. Le Brun, a French writer on painting, justly considering the expression of the *passions* as a very important as well as difficult branch of his art, has enumerated no fewer than twenty, of which the signs may be expressed by the pencil on canvas. That there are so many different states of

mind producing different effects which are visible on the features and the gestures, and that those features and gestures ought to be diligently studied by the artist, are truths which cannot be denied; but it is absurd to consider all these different states of mind as passions, since tranquillity is one of them, which is the reverse of passion.

A question of considerable importance in the philosophy of the human mind has been discussed at no small length, by several eminent authors, whether the different passions be each a degree of an original and innate disposition, distinct from those dispositions which are respectively the foundations of the other passions, or only different modifications of one or two general dispositions common to the whole race? The former opinion is held by all who build their system of metaphysics upon a number of distinct internal senses; and the latter by those, who, with Locke and Hartley, resolve what is commonly called instinct into an early association of ideas. See *INSTINCT* and *METAPHYSICS*. This question also involves in it the arguments respecting the disinterestedness of our most benevolent passions. But as it would swell this article beyond all due bounds to give even an abridged view of the arguments on both sides, we shall refer the reader to the writings of Messrs. Locke and Hartley, lord Kames, Reid's *Enquiry into the Human Mind*, and Dr. Sayer's *Disquisitions Metaphysical and Literary*, where they will find the question amply discussed.

PASSIONEI (Dominic), an Italian ecclesiastic, born at Fossombrone, in Urbino, in 1682, studied in the Clementine College at Rome, after which he went to Paris with Gualterio, the papal nuncio. In 1708 he was employed as secret agent of the court of Rome in Holland, and subsequently in Switzerland. Innocent XIII. made him titular archbishop of Ephesus, and Clement XII. a cardinal and secretary of the briefs. Finally he became keeper of the Vatican library, where he was distinguished by the encouragement he gave to the collation of MSS. of the Old Testament, for the use of Dr. Kennicott, &c. He died in 1761. He published an account of his negotiations in Switzerland, under the title of *Acta Legationis Helveticæ*, folio; and formed a library at the Clementine College. Benedict Passionei, his nephew, published a collection of ancient inscriptions, with annotations, folio, 1763.

PASSIR, a town and district of the south-east coasts of Borneo. The town is situated about fifty miles from the mouth of the river of this name, near the bottom of a large bay; it has sixteen reaches, and five other rivers joining it. Near the town it is very rapid: the tide rises nine feet, and ascends above the town. Over a bar at the mouth of the river is two fathoms water, with a muddy bottom.

The town consists of 300 wood houses, situated on the north side of the river, most of them inhabited by Buggess merchants. The house or palace of the sultan is on the south side, a short distance from the river. The neighbourhood, though flat and unhealthy, produces rice in great abundance; musk, benzoin, aloes, pepper, cassia,

and long nutmegs; also mastic and other gums, particularly dragon's blood; honey, gold dust, camphor, and various fruits. The imports are similar to those of the other Malay ports. The inhabitants are fraudulent, and have cut off many ships by treachery. This was formerly a place of considerable trade. The East India Company about 1772 attempted to settle a factory here for the sale of opium, piece-goods, &c., and for the purchase of the many valuable articles brought thither by the Buggesses from Celebes, Sooloo, &c. But the plan was frustrated by a commotion amongst the natives, at which the English commander took an alarm, and quitted the country, much against the wishes of the principal inhabitants. Since that period Passir has been seldom visited by Europeans. A few Chinese are settled here, who are in possession of the chief trade.

PASSIVE, *adj.* } *Fr. passif; Lat. passiv.*
PASSIVELY, *adv.* } *Pass.* This is, strictly, the
PASSIVENESS, *n. s.* } adjective of passion in its
PASSIVITY. } first sense, and means

receptive of impressions from an external agent; suffering without resistance; in grammar, a particular form of the verb: passively and passiveness correspond with these senses: passivity is an innovation of Cheyne's, see below; and passiveness is sometimes used to express calmness; patience of suffering.

We shall lose our *passiveness* with our being, and be as incapable of suffering as heaven can make us.

Decay of Piety.

High above the ground

Their march was, and the *passive* air upbore
 Their nimble tread. *Milton's Paradise Lost.*

Gravity and *passiveness* in children is not from discretion but phlegme. *Fell.*

A man may not only *passively* and involuntarily be rejected, but also may, by an act of his own, cast out or reject himself. *Pearson.*

Though some are *passively* inclined,
 The greater part degenerate from their kind.

Dryden.

As the mind is wholly *passive* in the reception of all its simple ideas, so it exerts several acts of its own, whereby out of its simple idea the other is formed. *Locke.*

The active information of the intellect, filling the *passive* reception of the will, like form closing with matter, grew actuate into a third and distinct perfection of practice. *South.*

The vis inertiae is a *passive* principle by which bodies persist in their motion or rest, receive motion in proportion to the force impressing it, and resist as much as they are resisted: by this principle alone there never could have been any motion in the world.

Newton's Opticks.

A verb *passive* is that which signifies passion or the effect of action: as doceor, I am taught.

Clarke's Latin Grammar.

There being no mean between penetrability and impenetrability, between *passivity* and activity, these being contrary and opposite, the infinite rarefaction of the one quality is the position of its contrary.

Cheyne's Philosophical Principles.

Not those alone, who *passive* own her laws,
 But who, weak rebels, more advance her cause.

Pope.

It will almost always produce a *passive* compliance with the wickedness of others, and there are few who

do not learn by degrees to practise those crimes which they cease to censure. *Johnson.*

PASS'OVER, n. s. Pass and over. A feast instituted among the Jews in commemoration of the time when God, smiting the first born of the Egyptians, passed over the habitations of the Hebrews; the sacrifice killed at this time.

Take a lamb, and kill the *pasover*.

Exodus.

The Jews *pasover* was at hand, and Jesus went up.

John ii. 13.

The lamb was the remembrance of the *passover*, as the blessed eucharist is of the death of Christ.

Jer. Taylor.

The Lord's *passover*, commonly called Easter, was ordered by the common law to be celebrated every year on a Sunday.

Ayliffe.

The *Passover* was called *pascha* by the old Greeks and Romans; not we presume from *pascha*, I suffer, as Chrysostom, Irenæus, and Tertullian, suppose, but from the Hebrew word *פסח*, passage, leap. The institution of this solemn festival, the reason of it, the alteration of the Hebrew calendar, and its other consequences, with all the peculiar ceremonies observed in the celebration of it, are particularly related in the twelfth chapter of *Exodus*. The obligation of keeping the *passover* was so strict that whosoever neglected to do it was condemned to death. Numb. ix. 13. But those who had any lawful impediment, as a journey, sickness, or any uncleanness, voluntary or involuntary: those that had been present at a funeral, or by any other accident had been defiled, were to defer the celebration of the *passover* till the second month of the ecclesiastical year, or to the 14th day of the month Jiar, which answers to April and May. See 2 Chron. xxx. 1, 2, &c. The modern Jews observe in general the same ceremonies that were practised by their ancestors, in the celebration of the *passover*; but add thereto very many superstitious observances. See Whitby's Dissertation in an appendix to the fourteenth chapter of St. Mark.

PASSPORT, n. s. Fr. *passport*. Permission of passage; a public certificate of leave to travel.

Under that pretext, fain she would have given a secret *passport* to her affection. *Sidney.*

Giving his reason *passport* for to pass.

Whither it would, so it would let him die. *Id.*

Let him depart; his *passport* shall be made,

And crowns for convoy put into his purse.

Shakespeare.

Having used extreme caution in granting *passports* to Ireland, he conceived that paper not to have been delivered. *Clarendon.*

Admitted in the shining throng

He shows the *passport* which he brought along;

His *passport* is his innocence and grace,

Well known to all the natives of the place.

Dryden.

At our meeting in another world;

For thou hast drunk thy *passport* out of this. *Id.*

The gospel has then only a free admission into the assent of the understanding, when it brings a *passport* from a rightly disposed will, as being the faculty of dominion, that commands all, that shuts out, and lets in, what objects it pleases. *South.*

Dame nature gave him comeliness and health,
And fortune, for a *passport* gave him wealth.

Harte.

A **PASSPORT, or Pass**, is a license or writing obtained from a government granting permission and a safe conduct to pass through the country without molestation: also a permission granted by any state to navigate in some particular sea, without molestation. It contains the name of the vessel, and that of the master, together with her tonnage, and the number of her crew, certifying that she belongs to the subjects of a particular state, and requiring all persons at peace with that state to suffer her to proceed on her voyage without interruption. The violation of *passports* expressly granted by the king, or by his ambassadors, to the subjects of a foreign power in time of mutual war, or committing acts of hostility against such as are in amity, league, or truce with us, who are here under a general implied safe conduct, are breaches of the public faith, without which there can be no intercourse or commerce between one nation and another; and such offences may, according to the writers upon the law of nations, be a proper ground of a national war. Balzac mentions a very honorable *passport* given by an emperor to a philosopher in these terms: 'If there be any one on land or sea hardy enough to molest Potamon, let him consider whether he be strong enough to wage war with Cæsar.'

PASSPORT is used likewise for a license granted by a prince for the importing or exporting merchandises, moveables, &c., without paying the duties. Merchants procure such *passports* for certain kinds of commodities; and they are always given to ambassadors and ministers for their baggage, equipage, &c.

PASSPORT is also a license obtained for the importing or exporting of merchandises deemed contraband, and declared such by tariffs, &c., as gold, silver, precious stones, ammunition of war, horses, corn, wool, &c., upon paying duties.

PASSUMAIL, a district of Sumatra, on the south-west coast, bordering south on Rejang, and north by Lamatang. It is governed by four nearly independent chiefs, and is part of the territory of the sultan of Palembang.

PASSUS, among the ancient Romans, a measure of length, being about four feet ten inches, or the 1000th part of a Roman mile. The word properly signifies the space betwixt the feet of a man walking at an ordinary rate. See **MEASURE**.

PAST, adj. (part.), n. s., & prep. From **PASS**. Gone over; gone through or spent; undergone; not present nor to come: as a noun substantive, the past time: as a preposition, beyond in point of time; out of reach; above or more than; incapable of.

We will go by the king's highway, until we be past thy borders. *Numbers xxi. 22.*

Sarah was delivered of a child, when she was past age. *Hebrews xi. 11.*

The northern Irish Scots have bows not past three quarters of a yard long, with a string of wreathed hemp, and their arrows not much above an ell.

Spenser on Ireland.

Past, and to come, seem best; things present worst. *Shakespeare.*

We must not

Prostitute our past cure malady

To empiricks.

Id. All's Well That Ends Well.

What's gone, and what's *past* help,
Should be *past* grief. *Id. Winter's Tale.*
The same inundation was not deep, not *past* forty
foot from the ground. *Bacon.*
That France and Spain were taught the use of
shipping by the Greeks and Phœnicians is a thing
past questioning. *Heylin.*
Past hope of conquest, 'twas his latest care
Like falling Cæsar decently to die. *Druden.*
Her life she might have had; but the despair
Of saving his had put it *past* her care. *Id.*
I'm stupified with sorrow, *past* relief
Of tears. *Id.*
Love, when once *past* government, is consequently
past shame. *L'Extrange.*
That he means paternal power is *past* doubt from
the inference he makes. *Locke.*
That the bare receiving a sum should sink a man
into a servile state is *past* my comprehension.
Collier on Pride.

The *past* is all by death possess,
And frugal fate that guards the rest,
By giving bids us live to-day. *Fenton.*
Many men have not yet sinned themselves *past* all
sense of feeling, but have some regrets; and, when
their spirits are at any time disturbed with the sense
of their guilt, they are for a little time more watch-
ful over their ways; but they are soon disheartened.
Calamy's Sermons.
This not alone has shone on ages *past*,
But lights the present, and shall warm the last.
Pope.
A life of glorious labours *past*. *Id.*
For several months *past* papers have been written
upon the best publick principle, the love of our
country. *Swift.*

PASTE, *n. s. & v. a.* } Fr. *paste, paster*;
PASTEBOARD, *n. s. & adj.* } Ital. *pasta*; Lat.
pastum. A thin cement of flour and water;
dough; an artificial mixture in imitation of
precious stones: to fasten or spread with paste:
pasteboard is, a kind of paper board made by
past together layers of paper, or the macerated
and coarser materials of paper.

Except you could bray Christendom in a mortar,
and mould it in a new *paste*, there is no possibility
of an holy war. *Bacon.*

With particles of heavenly fire
The God of nature did his soul inspire;
Which wise Prometheus tempered into *paste*,
And mixt with living streams, the godlike image
cast. *Dryden.*

When the gods moulded up the *paste* of man,
Some of their dough was left upon their hands. *Id.*

Tintoret made chambers of board and *pasteboard*,
proportioned to his models, with doors and windows,
through which he distributed on his figures artificial
lights. *Id.*

By *past*ing the vowels and consonants on the sides
of dice, his eldest son played himself into spelling.
Locke.

Put silk worms on whited brown paper in a *paste-*
board box. *Mortimer.*

He has the whitest hand that ever you saw, and
raises *paste* better than any woman.

Addison's Spectator.
I would not make myself merry even with a piece
of *pasteboard*, that is invested with a publick charac-
ter. *Addison.*

Young creatures have learned their letters and syl-
lables by having them *past*ed upon little flat tablets.
Watts.

PASTE is likewise used for a preparation of
wheaten flour, boiled up and incorporated with
water, used by various artificers, as upholsterers,
saddlers, bookbinders, &c., instead of glue or
size; to fasten or cement their cloth, leathers,
papers, &c. When paste is used by bookbinders,
or for paper hangings to rooms, they mix a
fourth, fifth, or sixth of the weight of the flour
of powdered resin; and, where it is wanted still
more tenacious, gum arabic or any kind of size
may be added. Paste may be preserved from
vermin by dissolving a little sublimate, in the
proportion of a drachm to a quart, in the water
employed for making it, which will prevent them
from preying upon it.

PASTES used in the imitation or counterfeiting
of gems in glass. Gems made of pastes are no
way inferior to the native stones, when carefully
made and well polished, in brightness or trans-
parency, but want their hardness.

To make pastes of extreme hardness, and ca-
pable of taking the colors of the gems. Take of
prepared crystal 10 lbs., salt of pulverine 6 lbs.,
sulphur of lead 2 lbs.; mix all these well into a
fine powder: make the whole with common
water in a hard paste, and make this paste into
small cakes of about 3 oz. each, with a hole in
their middle; dry them in the sun, and after-
wards calcine them in the straitest part of a
potter's furnace. After this, powder them, and
levigate them to a perfect fineness on a porphyry
stone, and set this powder in pots in a glass
furnace to purify for three days; then cast the
whole into water, and afterwards return it into the
furnace, where let it stand fifteen days, in which
time all foulness and blisters will disappear, and
the paste will greatly resemble the natural jewels.
To give this the color of the emerald, add to it
brass thrice calcined; for a sea-green, brass
simply calcined to a redness; for a sapphire,
add zaffer, with manganese; and for a topaz,
manganese and tartar. The color of the coun-
terfeit gems may be made deeper or lighter ac-
cording to the work for which the stones are
designed; and small stones for rings, &c., re-
quire a deeper color, and large ones a paler.
Besides the colors made from manganese, verdi-
gris, and zaffer, which are the ingredients com-
monly used, there are other very fine ones which
care and skill may prepare. A very fine red
may be made from gold, and one not much in-
ferior to that from iron; a very fine green from
brass or copper; a sky-color from silver, and a
much finer one from the garnets of Bohemia.
Another way of making the paste to imitate the
colored gems is this: Take a quantity of sugar
of lead; set it in sand, in a glass body well luted
from the neck downwards; leave the mouth of
the glass open, and continue the fire twenty-four
hours; then take out the salt, and, if it be not red
but yellowish, powder it fine, and return it into
the vessel, and keep it in the sand heat twenty-
four hours more, till it becomes as red as cinna-
bar. The fire must not be made so strong as to
melt it; for then all the process is spoiled. Pour
distilled vinegar on this calcined salt, and sepa-
rate the solution from the dregs; let the decanted
liquor stand six days in an earthen vessel, to
give time for the finer sediment to subside

filter this liquor and evaporate it in a glass body, and there will remain a most pure salt of lead; dry this well, then dissolve it in fair water; let the solution stand six days in a glazed pan; let it subside, then filter the clear solution, and evaporate it to a yet more pure white and sweet salt; repeat this operation three times; put the now perfectly pure salt into a glass vessel, set it in a sand heat for several days, and it will be calcined to a fine impalpable powder of a lively red. Take all the ingredients as in the common composition of the pastes of the several colors, only, instead of red lead, use this powder; and the produce will well reward the trouble of the operation. A paste proper for receiving colors may be readily made by pounding and mixing 6 lbs. of white sand cleansed, 3 lbs. of red lead, 2 lbs. of purified pearl-ashes, and 1 lb. of nitre. A softer paste may be made in the same manner, of 6 lbs. of white sand cleansed; red lead, and purified pearl-ashes, of each 3 lbs; 1 lb. of nitre, half a pound of borax, and 3 ozs. of arsenic. For common use, 1 lb. of common salt may be substituted for the borax. This glass will be very soft, and will not bear much wear if employed for rings, buckles, or such imitations of stones as are exposed to much rubbing; but for ear-rings, ornaments worn on the breast, and those little used, it may last a considerable time. See GLASS-MAKING.

To make doublet pastes, let the crystal or glass be first cut by the lapidaries in the manner of a brilliant, except that, in this case, the figure must be composed from two separate stones, or parts of stones, formed in the manner of the upper and under parts of a brilliant, if it was divided in a horizontal direction, a little lower than the middle. After the two plates of the intended stone are thus cut, and fitted so exactly that no division can appear when they are laid together, the upper part must be polished ready for setting; and then the color must be put betwixt the two plates by this method. Take of Venice or Cyprus turpentine two scruples; and add to it one scruple of the grains of mastich chosen perfectly pure, free from foulness, and previously powdered. Melt them together in a small silver or brass spoon ladle, or other vessel, and put to them gradually any of the colored substances below mentioned, being first well powdered; stirring them together as the color is put in that they may be thoroughly commixed. Warm then the doublets to the same degree of heat as the melted mixture; and paint the upper surface of the lower part, and put the upper one instantly upon it, pressing them to each other, but taking care that they may be conjoined in the most perfectly even manner. When the cement or paint is quite cold and set, the redundant part of it, which has been pressed out of the joint of the two pieces, should be gently scraped off the side, till there be no appearance of any color on the outside of the doublets: and they should then be skilfully set; observing to carry the mounting over the joint, that the upper piece may be well secured from separating from the under one. The color of the ruby may be best imitated, by mixing a fourth part of carmine with some of the finest crimson

lake that can be procured. The sapphire may be counterfeited by very bright Prussian blue, mixed with a little of the above mentioned crimson lake, to give it a cast of the purple. The Prussian blue should not be very deep-colored, or but little of it should be used: for otherwise it will give a black shade that will be injurious to the lustre of the doublets. The emerald may be counterfeited by distilled verdigris, with a little powdered aloes. But the mixture should not be strongly heated, nor kept long over the fire after the verdigris is added: for the color will be soon impaired by it. The resemblance of the garnet may be made by dragon's blood; which, if it cannot be procured of sufficient brightness, may be improved by a very small quantity of carmine. The amethyst may be imitated by the mixture of some Prussian blue with the crimson lake; but the proportions can only be well regulated by direction, as different parcels of the lake and Prussian blue vary extremely in the degree of strength of the color. The yellow topazes may be counterfeited by mixing the powdered aloes with a little dragon's blood, or by good Spanish anotto; but the color must be very sparingly used, or the tinge will be too strong for the appearance of that stone. The chrysolite, hyacinth, vinegar garnet, eagle marine, and other such weaker or more diluted colors, may be formed in the same manner, by lessening the proportions of the colors; or by compounding them together correspondently to the hue of the stone to be imitated; to which end it is proper to have an original stone, or an exact imitation of one, at hand when the mixture is made, in order to the more certain adapting the colors to the effect desired: and when these precautions are taken, and the operation well conducted, it is practicable to bring the doublets to so near a resemblance of the true stones, that even the best judges cannot distinguish them, when well set, without inspecting them betwixt the eye and light, in such position that the light may pass through the upper part and corners of the stone; when it will easily be perceived that there is no color in the body of the stone.

M. Fontaineu, of the Royal Academy of Sciences at Paris, proposed the following processes for imitation pastes, which were approved: Although the different calces of lead are all adapted to produce the same effect in vitrification; yet M. Fontaineu prefers lead in scales, and next to that minium, as being the most constantly pure. Sift through a silk sieve the preparations of lead to be used in the vitrification, to separate the grosser parts; as also the lead in a metallic state when white lead in scales is employed. The base of factitious gems is calx of lead and rock-crystal. Pure sand, flint, and the transparent pebbles of rivers, are substances equally fit to make glass; but as it is first necessary to break masses of crystal, stones, or pebbles, into smaller parts; so by this operation particles of iron or copper are frequently introduced, and to these dust or greasy matters are also apt to adhere. Our author therefore begins by putting the pounded crystal or pebbles into a crucible, which he places in a degree of heat ca-

pable of making the mass red hot; he then pours it into a wooden bowl filled with very clear water; and, shaking the bowl from time to time, the small portions of coals furnished by the extraneous bodies swim on the surface of the water, and the vitrifiable earth, with the iron, &c., rests on the bottom. He then decants the water; and, having dried the mass, pounds it, sifts the powder through the finest silk sieve; then digests the powder four or five hours with muriatic acid, shaking the mixture every hour. After having decanted the acid from the vitrifiable earth, he washes the latter until the water no longer reddens the tincture of turnsol. The earth, being dried, is passed through a silk sieve, and is then fit for use. Nitre, salt of tartar, and borax, are the three species of salts that enter with quartz and the calces of lead into M. Fontaineu's vitrifications. The success depends much on the accurate proportion of the substances made use of to form the crystal which serves as a base. After having tried a great variety of receipts, our author recommends the following: 1. Take two parts and a half of lead in scales, one part and a half of rock crystal or prepared flints, half a pint of nitre, as much borax, and a quarter part of glass of arsenic. These, being well pulverised and mixed together, are put into a Hessian crucible and submitted to the fire. When the mixture is well melted, pour it into cold water; then melt it again a second and a third time, taking care after each melting to throw it into fresh cold water, and to separate from it the lead that may be revived. The same crucible should not be used a second time, as the glass of lead is apt to penetrate it, and lose the contents. Cover the crucible well, to prevent any coals getting into it, which would spoil the composition. 2. Take two parts and a half of white ceruse, one part of prepared flints, half a part of salt of tartar, and a quarter part of calcined borax: melt the mixture in a Hessian crucible, and then pour it into cold water; then melt it again and wash it a second and a third time, the same precautions being observed. 3. Take two parts minium, one part rock-crystal, half a part of nitre, and as much salt of tartar: this mixture, being melted, must be treated as the former. 4. Take three parts of calcined borax, one part of prepared rock-crystal, and one part of salt of tartar; these, being well mixed and melted together, must be poured into warm water; the water being decanted, and the mass dried, an equal quantity of minium must be added to it; it is then to be melted and washed several times as directed above. 5. That called by our author the Mayence base, and which he considers as one of the finest crystalline compositions hitherto known, is thus composed: Take three parts of fixed alkali of tartar, one part of rock-crystal or flint pulverised: the mixture to be well baked together, and then left to cool. It is afterwards poured into a crucible of hot water to dissolve the fritt; the solution of the fritt is then received into a stone-ware pan, and aquafortis added gradually till it no longer effervesces: this water being decanted, the fritt must be washed in warm water till it has no longer any taste: the fritt is then dried, and mixed with one part

and a half of fine ceruse or white lead in scales; and this mixture must be well levigated with a little distilled water. To one part and a half of this powder dried add an ounce of calcined borax: let the whole be well mixed in a marble mortar, then melted and poured into cold water. These fusions and washings having been repeated, and the mixture dried and powdered, a twelfth part of nitre must be added, and then melted for the last time; when a very fine crystal will be found in the crucible. 6. For very fine white stones: take 8 ozs. of ceruse, 3 ozs. of rock-crystal pulverised, 2 ozs. of borax finely powdered, and half a grain of manganese; having melted and washed this mixture as above, it produces a very fine white crystal.

There are three degrees of heat proper for pastes very different in their energy. The fire kept up in the wind-furnaces in the laboratories of chemists is less active than that whose effect is accelerated by the means of bellows; and a fire supported by wood, and kept up during sixty hours without interruption, produces singular effect in vitrification, and renders the glass finer and less alterable. When recourse is had to the forge, in order to operate a vitrification, it is necessary to turn about the crucible from time to time, that the mass may melt equally. Some coal also should be replaced, in proportion as it consumes towards the nozzle of the bellows; for, without this precaution, we should run the risk of cooling the crucible opposite to the flame, and probably of cracking it, when all the melted mass, running among the coals, would be totally lost. Though this is the readiest way of melting, it should not be employed out of choice; for the crucible often breaks, or coals get into it, and reduce the calx of lead to a metallic state. The wind-furnace is either square or round. A small cake of baked clay or brick, of the thickness of an inch, is placed upon the grate; and upon this cake is placed the crucible, surrounded with coals.

The following are some of the receipts recommended by M. Fontaineu:—1. For the white diamond:—Take the base of Mayence. This crystal is very pure and has no color. 2. For the yellow diamond:—To an ounce of the fourth base, add for color 25 grains of luna cornea, or 10 grains of glass of antimony. 3. For the emerald:—1. To 15 ozs. of either of the bases, add for color 1 dr. of mountain-blue and 6 grs. of glass of antimony; or, 2. To 1 oz. of the second base add 20 grs. of glass of antimony, and 3 grs. of calx of cobalt. 4. For the sapphire:—To 24 ozs. of the Mayence base add 2 drs. 64 grs. of the calx of cobalt. 5. For the amethyst:—To 24 ozs. of the Mayence base add 4 drs. of prepared manganese and 4 grs. of precipitate of cassius. 6. For the beryl:—To 24 ozs. of the third base add 96 grs. of glass of antimony, and 4 grs. of calx of cobalt. 7. For the black agate:—To 24 ozs. of either of the bases add 2 ozs. of the mixture directed above in par. f. 8. For the opal:—To 1 oz. of the third base add 10 grs. of luna cornea, 2 grs. of magnet, and 26 grs. of absorbent earth. 9. For the oriental topaz:—To 24 ozs. of the first or third base add 5 drs. of glass of antimony. 10. For the topaz of Saxony:—To 24

ozs. of the same base, add 6 drs. of the glass of antimony. 11. For the topaz of Brazil:—To 24 ozs. of the second or third base, add 1 oz. 24 grs. of the glass of antimony, and 8 grs. of precipitate of cassius. 12. For the hyacinth:—To 24 ozs. of the base made with rock-crystal add 2 drs. 48 grs. of glass of antimony. 13. For the oriental ruby:—1. To 16 ozs. of the Mayence base, add a mixture of 2 drs. 48 grs. of the precipitate of cassius, the same quantity of crocus Martis prepared in aquafortis, the same of golden sulphur of antimony and of fusible manganese, with 2 ozs. of mineral crystal; or, 2. To 20 ozs. of the base made with flint, add half an ounce of fusible manganese, and 2 ozs. of mineral crystal. 14. For the balass ruby:—1. To 16 ozs. of the Mayence base, add the above coloring powder, but diminished one-fourth part; or, 2. To 20 ozs. of the base made with flints, add the same coloring powder, but with one-fourth less of the manganese. The factitious gems are easily distinguished from the natural, by their softness and fusibility; by their solubility in acids; by their causing only a single refraction of the rays of light; and, in many cases, by their specific gravity, which exceeds 2.76 in all precious gems of the first order, as the diamond, ruby, sapphire, &c.

A prize having been offered by the Society for the Encouragement of the Arts in France for the best memoir on the fabrication of imitation stones, it was decreed to M. D. Wieland.

The base of all these imitations is Strass, or white crystal. The materials employed are melted in Hessian crucibles, and a porcelain furnace; or, what is preferable, a potter's furnace is afterwards used. The more tranquil and prolonged that the fusion is, the more hardness and beauty does the strass acquire.

Strass.—The following three mixtures give a very fine strass:—

| | | | |
|-------------------|-------|--------|-------|
| Rock crystal | 0.318 | 0.3170 | 0.300 |
| Minium | 0.490 | 0.4855 | 0.565 |
| Potassa, pure | 0.170 | 0.1770 | 0.105 |
| Borax | 0.021 | 0.0200 | 0.030 |
| Arsenic, oxide of | 0.001 | 0.0005 | |
| | 1.000 | 1.0000 | 1.000 |

M. Lançon recommends the following mixture for a pure strass:—

| | |
|-------------------------|-------|
| Litharge | 0.540 |
| White lead | 0.406 |
| White tartar, or potash | 0.054 |

Topaz.—The imitation of topaz is difficult. It passes from the white of strass to sulphur yellow, violet and red purple, according to circumstances which are not determined. The following are two of M. Wieland's recipes:—

| | | |
|-------------------|---------|------|
| White strass | 0.95816 | 0.99 |
| Glass of antimony | 0.04089 | |
| Purple of cassius | 0.00095 | |
| Oxide of iron | | 0.01 |
| | 1.00000 | 1.00 |

These mixtures sometimes yield an opaque mass, translucent at the edges, and of a red color in thin plates. By mixing it with eight times

its weight of strass, and keeping the mixture in fusion for thirty hours in a potter's furnace, the result is a fine yellowish crystal. This crystal, re-melted by the blow-pipe, produces the finest imitation of eastern ruby.

Ruby.—A ruby less beautiful, and of a different tint, may be made thus:—

| | |
|--------------------|--------|
| Strass | 0.9755 |
| Oxide of manganese | 0.0245 |

1.0000

Sapphire.—The composition for this paste is—

| | |
|----------------------------|--------|
| Strass, very white | 0.9855 |
| Oxide of cobalt, very pure | 0.0145 |

1.0000

This mixture must be put into a Hessian crucible, carefully luted, and remain thirty hours in the fire. If the process is well conducted, the result will be a very hard glass.

Amethyst.—Very deep amethyst may be obtained from—

| | |
|--------------------|--------|
| Strass | 0.9870 |
| Oxide of manganese | 0.0078 |
| Oxide of cobalt | 0.0050 |
| Purple of cassius | 0.0002 |

1.0000

M. Lançon uses—

| | |
|--------------------|--------|
| Strass | 0.9977 |
| Oxide of manganese | 0.0022 |
| Oxide of cobalt | 0.0001 |

1.0000

Beryl, or aquamarine, is made with—

| | |
|-------------------|--------|
| Strass | 0.9926 |
| Glass of antimony | 0.0070 |
| Oxide of cobalt | 0.0004 |

1.0000

The following is M. Lançon's recipe for emerald:—

| | |
|-------------------|--------|
| Strass | 0.9904 |
| Acetate of copper | 0.0080 |
| Peroxide of iron | 0.0016 |

1.0000

Peridot.—By augmenting the proportion of oxide of chrome and oxide of copper in the first composition of emerald, and adding oxide of iron, we may vary the green shades, and imitate the peridot and deep-colored emerald.

There has been at different times a method practised by particular persons of taking the impressions and figures of antique gems, with their engravings, in glass of the color of the original gem. This has always been esteemed a very valuable art, and greatly preferable to the ordinary method of doing it on sealing-wax or brimstone; but being a secret in the hands of particular persons, who obtained their bread by it, it died with them, and every new artist was obliged to re-invent the method; till at length M. Homberg, having carried it to great perfection, gave the whole process to the world. M. Homberg was favored in his attempts with all the engraved gems of the king's cabinet; and took such

elegant impressions, and made such exact resemblances of the originals, and that in glasses so artfully tinged to the color of the gems themselves, that the nicest judges were deceived in them, and often took them for the true antique stones. The chief care in the operation is to take that impression of the gem in a very fine earth, and to press down upon this a piece of proper glass, softened or half melted at the fire, so that the figures of the impression made in the earth may be nicely and perfectly expressed upon the glass. All earths run more or less easily in the fire as they are more or less mixed with saline particles. As all salts make earths run into glass, and as it is necessary to use an earth on this occasion for the making a mould, it being also necessary, to the perfection of the experiment, that this earth should not melt or run, some earth must be got which naturally contains very little salt. Of all the earths which M. Homberg examined, none proved so fit for the purpose as the common Tripoli, used to polish glass and stones. Of this earth there are two common kinds: the one reddish, and composed of several flakes or strata; the other yellowish, and of a simple structure. The yellowish kind, commonly called Venetian tripoli, is the best. It receives the impressions very beautifully; and never mixes with the glass in the operation, which the red kind sometimes does. When the tripolis are separately powdered, the red kind must be mixed with so much water as will bring it to the consistence of paste, so that it may be moulded like a lump of dough between the fingers; this paste must be put into a small crucible of a flat shape, and about half an inch or a little more in depth, and of such a breadth at the surface as is a little more than that of the stone whose impression is to be taken. The crucible is to be nicely filled with this paste lightly pressed down into it, and the surface of the paste must be strewed thickly over with the fine powder of the yellow tripoli not wetted. When this is done, the stone, of which the impression is to be taken, must be laid upon the surface, and pressed evenly down into the paste with a finger and thumb, so as to make it give a strong and perfect impression; the tripoli is then to be pressed nicely even to its sides with the fingers, or with an ivory knife. The stone must be thus left a few moments, for the humidity of the paste to moisten the dry powder of the yellow tripoli which is strewed over it: then the stone is to be carefully raised by the point of a needle fixed in a handle of wood; and, the crucible being then turned bottom upwards, it will fall out, and the impression will remain very beautifully on the tripoli. If the sides of the cavity have been injured in the falling out of the stone, they may be repaired; and the crucible must then be set, for the paste to dry, in a place where it will not be incommoded by the dust. The red tripoli, being the more common and the cheaper kind, is here made to fill the crucible only to save the other, which alone is the substance fit for taking the impression. When the stone is taken out, it must be examined, to see whether any thing be lodged in any part of the engraving, because if there be any of the tripoli left there, there will certainly be so much want-

ing in the impression. When the crucible and paste are dry, a piece of glass must be chosen of a proper color, and cut to a size proper for the figure; this must be laid over the mould, but in such a manner that it does not touch the figures, otherwise it would spoil them. The crucible is then to be brought near the furnace by degrees, and gradually heated till it cannot be touched without burning the fingers; then it is to be placed in the furnace under a muffle, surrounded with charcoal. Several of these small crucibles may be placed under one muffle; and, when they are properly disposed, the aperture of the muffle should have a large piece of burning charcoal put to it, and then the operator is to watch the process, and see when the glass begins to look bright: this is the signal of its being fit to receive the impression. The crucible is then to be taken out of the fire; and the hot glass must be pressed down upon the mould with an iron instrument, to make it receive the regular impression: as soon as this is done, the crucible is to be set at the side of the furnace out of the way of the wind, that it may cool gradually without breaking. When it is cold, the glass is to be taken out, and its edges should be grated round with pincers, which will prevent its flying afterwards, which is an accident that sometimes happens when this caution has been omitted, especially when the glass is naturally brittle. The different colored glasses are of different degrees of hardness, according to their composition; but the hardest to melt are always the best for this purpose, and this is known by a few trials. If it be desired to copy a stone in relief which is naturally in creux, or to take one in creux which is naturally in relief, there needs no more than to take an impression first in wax or sulphur, and to mould that upon the paste of tripoli instead of the stone itself: then, proceeding in the manner before directed, the process will have the desired success. The application of paste to multiply and preserve the impressions of caméos and intaglios is an object very interesting to artists and to antiquaries, as well as to men of learning and taste in the fine arts. This art, though not long restored to any degree of perfection, is of very considerable antiquity. The great prices which the ancients paid for the elegant gems engraved by the celebrated Greek artists, could not but suggest to them the idea of multiplying their numbers, by taking off their impressions in wax, in sulphur, in plaster, or in clay; but more particularly in colored glass, or that vitrified substance commonly called paste. As the impressions on paste are durable, and imitate the colors and brilliancy of the original stones, they mostly serve the same purposes as the gems themselves. This art was therefore practised, not only by the Greeks, but by all the nations who cultivated Grecian taste. Many of the finest gems of antiquity are now lost, and their impressions are to be found only on ancient pastes. Numerous collections of them have been formed by the curious. Instances of this are found in the Florentine Museum, in Stosch's work on ancient gems with inscriptions, and in Winckelman's description of Stosch's cabinet. The art of taking impressions of gems seems not

to have been altogether lost even in the Gothic ages; for Heraclius, who probably lived in the ninth century, and wrote a book *De coloribus et artibus Romanorum*, teaches in very plain terms how to make them. Indeed, some of the few who then possessed this art, taking advantage of the ignorance of the times, sold pastes for the original gems. Thus the famous emerald of the abbey of Reichnaw near Constance, although a present made by Charlemagne, is now found to be a piece of glass. And thus the celebrated emerald vase in the cathedral of Genoa is likewise found to be a paste. The Genoese received this vase at the taking of Cesare, in 1101, as an equivalent for a large sum of money; nor was any imposition then suspected, for in 1319 they pawned it for 1200 marcs of gold. But this ingenious art, revived indeed in Italy, in the time of Laurence De Medicis, and Pope Leo X., was not cultivated in an extensive manner till the beginning of the eighteenth century, when M. Homberk restored it. In this he is said to have been greatly assisted and encouraged by the then duke of Orleans regent of France, who amused himself with that celebrated chemist, in taking off impressions in paste for the king of France's, his own, and other collections of gems. According to the French Encyclopedists, M. Clachant the elder, an engraver of some note, who died in Paris in 1781, learned this art from his royal highness, to whose household, his father or he, seems to have belonged. Mad. Feloux next cultivated this art. She had been taught by her father, who, in quality of *garçon de chambre* to the regent, had often assisted in the laboratory of his master, where he acquired this knowledge. Baron Stosch, a Prussian, who travelled over Europe in quest of original engraved stones and impressions of ancient gems, for the elegant work which he published and Picart engraved, entitled *Gemmæ antiquæ coloratæ*, was well acquainted with this art. He had taught it to his servant Christian Dehn, who settled in Rome, where he made and sold his well known sulphur impressions and pastes. The difficulties in taking off the cameos arising from their size and form, and from the various nature of the different sorts of glass, which do not well unite into different strata, are very numerous: nor could the completest success in the chemical and mechanical branch of the art produce a tolerable cameo. Impressions or imitations, if unassisted by the tool of the engraver, do not succeed: because the undercutting and deep work of most of the originals require to be filled up with clay or wax, that the moulds may come off safe without injuring them. Hence the impressions from these moulds come off hard, and destitute of delicacy, sharpness, and precision of outline, till the underworking of the moulder is cut away. But Mr. Reiffenstein of Rome, by perseverance, and the assistance of able artists, overcame most of these difficulties; and had the satisfaction of producing variegated cameos which can hardly be distinguished from the originals. But, of all the artists who have taken impressions of engraved gems in sulphur and in paste, no one seems to have carried that art to greater perfection than Mr. James Tasse, a

native of Glasgow, who resided in London. The great demand for his pastes was perhaps owing in the beginning to the London jewellers, who introduced them into fashion, by setting them in rings, seals, bracelets, necklaces, and other trinkets. The reputation of these impressions having reached the empress Catharine II. of Russia, she ordered a complete set; which, being accordingly executed in the best and most durable manner, were arranged in elegant cabinets, and placed in the apartments of her superb palace at Czarsko Zelo. The impressions were taken in a beautiful white enamel composition, which is not subject to shrink or form air-bladders; which emits fire when struck with steel, and takes a fine polish; and which shows every stroke and touch of the artist in higher perfection than any other substance. It was the learned Mr. Raspe who arranged this great collection, and made out the descriptive catalogue, from which this account is taken.

PASTES for fishing are variously compounded, almost according to the angler's own fancy; but there should always be a little cotton wool, shaved lint, or fine flax, to keep the parts of it together, that it may not fall off the hook. White bread and honey will make a proper paste for carp or tench. Fine white bread alone, with a little water, will serve for roach and dace; and mutton suet and soft new cheese for barbel. Strong cheese with a little butter, and colored yellow with saffron, will make a good winter paste for a chub.

But, among all the variety of pastes, there is none so often used as the simple and plain one made with white bread and milk, which requires only clean hands.

In September, and all the winter months, when you angle for chub, carp, and bream, with paste, let the bait be as big as a large hazle nut: but for roach and dace, the bigness of an ordinary bean is sufficient.

PASTER, *n. s.* Fr. *pasturon*; Ital. *passatoia*, from Lat. *passus*. That part of the leg of a horse between the fetlock and the hoof.

I will not change my horse with any that treads on four *pasterns*. *Shakspeare. Henry V.*

The colt that for a stallion is designed,
Upright he walks on *pasterns* firm and straight,
His motions easy, prancing in his gait. *Dryden.*

Being heavy, he should not tread stiff, but have a *pastern* made him to break the force of his weight: his body thus hangs on the hoof, as a coach doth by the leathers. *Grew.*

PASTIL, *n. s.* Fr. *pastille*; Ital. *pastiglia*; Lat. *pastillus*. A roll of paste.

To draw with dry colors, make long *pastils*, by grinding red lead with strong wort, and so roll them up like pencils drying them in the sun.

Peacham on Drawing.

PASTIL, in pharmacy, is a dry composition of sweet-smelling resins, aromatic woods, &c. sometimes burnt to clear and scent the air of a chamber.

PASTIME, *n. s.* Pass and time. Sport; amusement; something to pass time away; diversion.

It was more requisite for Zelmane's hurt to rest, than sit up at those *pastimes*; but she that felt no

wound but one, earnestly ceas'd to have the pasto-
rals.

Sidney.

I'll be as patient as a gentle stream,
And make a *pastime* of each weary step,
Till the last step has brought me to my love.

Shakespeare.

With these

Find *pastime*, and bear rule; thy realm is large.

Milton.

A man much addicted to luxury, recreation, and
pastime, should never pretend to devote himself en-
tirely to the sciences, unless his soul be so refined
that he can taste these entertainments eminently in
his closet.

Watts.

While many a *pastime* circled in the shade,
The young contending as the old surveyed;
And many a gambol frolicked o'er the ground,
And slights of art, and feats of strength went round.

Goldsmith.

Even in his *pastimes* he requires a friend,
To warn, and teach him safely to unbend,
'O'er all his pleasures gently to preside,
Watch his emotions, and control their tide.

Cowper.

PASTIMES, ANCIENT BRITISH. Most of the
recreations of our ancestors are resolvable into
the public defence of the state against the attacks
of a foreign enemy. 'Every Friday in Lent,'
says Fitz-Stephen, 'a company of young men
comes into the field on horseback, attended and
conducted by the best horsemen: then march
forth the sons of the citizens, and other young
men with disarmed lances and shields; and there
practise feats of war. Many courtiers likewise,
when the king is near the spot, and attendants
upon noblemen, do repair to these exercises;
and, while the hope of victory does inflame their
minds, they show by good proof how serviceable
they would be in martial affairs.' This evidently
is of Roman descent, and brings to our recollection
the Ludus Trojæ, supposed to be the inven-
tion, as it was the common exercise, of Asca-
nius. In the vacant intervals of industry and
labor, commonly called the holy-days, indolence
and inactivity, which now mark this portion of
time, were found only in those who were dis-
tempered with age or infirmity. Fitz-Stephen
says, 'In Easter holidays they fight battles upon
the water. A shield is hanged upon a pole,
fixed in the middle of the stream. A boat is
prepared without oars, to be borne along by the
violence of the water; and in the forepart
thereof standeth a young man, ready to give
charge upon the shield with his lance. If so be
that he break his lance against the shield, and
doth not fall, he is thought to have performed a
worthy deed. If without breaking his lance he
runs strongly against the shield, down he falleth
into the water; for the boat is violently forced
with the tide: but on each side of the shield ride
two boats, furnished with young men, who re-
cover him who falleth soon as they may. In the
holidays all the summer the youths are exercised
in leaping, dancing, shooting, wrestling, casting
the stone, and practising their shields; and the
maidens trip with their timbrels, and dance as
long as they can well see. In winter, every
holiday before dinner, the boars prepared for
brawn are set to fight, or else bulls or bears are
baited.' Such were the pursuits to which leisure
was devoted by our forefathers so far back as

1130. Their immediate successors breathed the
same spirit. In 1222, the sixth year of Henry
III., certain masters in exercises of this kind
made a public profession of their instructions
and discipline, which they imparted to those who
were desirous of attaining excellence and victory
in these honorable achievements. About this
period, persons of rank and family introduced
the game of Tennis; and erected courts or ob-
long edifices for the performance of it. In the
reign of Henry III. the Quintain was a sport
much in fashion in almost every part of the king-
dom. This contrivance consisted of an upright
post firmly fixed in the ground, upon the top of
which was a cross piece of wood, moveable upon
a spindle; one end of which was broad like
the flat part of a halberd, while at the other end
was hung a bag of sand. The exercise was per-
formed on horseback. The masterly performance
was, when, upon the broad part being struck
with a lance, which sometimes broke it, the as-
sailant rode swiftly on, so as to avoid being
struck on the back by the bag of sand, which
turned round instantly upon the stroke given,
with a very swift motion. He who executed
this feat in the most dexterous manner was de-
clared victor. But if, upon the aim taken, the
contender miscarried in striking at the broad-
side, his want of skill became the ridicule and
contempt of the spectators. Dr. Plott, in his
Natural History of Oxfordshire, tells us, that
this *pastime* was in practice in his time at Ded-
dington. He and Matthew Paris give similar
accounts. But all the manly *pastimes* seem to
have given place to one indeed no less manly,
which was Archery. This continued till the
reign of Charles I. It appears from 33 Hen.
VIII. that, by the intrusion of other pernicious
games, archery had been for a long time dis-
used; to revive which a statute was made, to-
wards the beginning of James I.'s reign. He,
to gratify the importunity of the common people,
published a book of sports, in which the people
had been some time before indulged on Sunday
evenings, but which had been lately prohibited.
These sports consisted of dancing, singing,
wrestling, church ales, and other profanations of
that day. Charles, his successor, in the very
entrance of his reign, abolished these sports.

PASTINACA, the parsnep, a genus of the
digynia order and pentandria class of plants;
natural order forty-fifth, umbellatæ: fruit an el-
liptical compressed plane; petals involuted and
entire; species three.

1. *P. panax*: the root is perennial, thick,
fleshy, tapering like the garden parsnep; the
stalk is strong, branched, rough towards the bot-
tom, and rises seven or eight feet in height; the
leaves are pinnated, consisting of several pairs of
pinne, which are oblong, serrated, veined, and
towards the base appear unformed on the upper
side: the flowers are small, of a yellowish color,
and terminate the stem and branches in flat um-
bels; the general and partial umbels are com-
posed of many radii; the general and partial
involucra are commonly both wanting; all the
florets are fertile, and have a uniform appear-
ance; the petals are five, lance-shaped, and
curled inwards; the five filaments are spreading,

curved, longer than the petals, and furnished with roundish anthers; the germen is placed below the corolla, supporting two reflexed styles, which are supplied with blunt stigmata; the fruit is elliptical, compressed, divided into two parts, containing two flat seeds, encompassed with a narrow border. It is a native of the south of Europe, and flowers in June and July. It bears the cold of our climate very well, and commonly matures its seeds; and its juice here manifests some of those qualities which are discovered in the officinal opoponax; but it is only in the warm regions of the east, and where this plant is a native, that its juice concretes into this gummy resinous drug. Opoponax is obtained by means of incisions made at the bottom of the stalk of the plant, whence the juice gradually exudes; and by undergoing spontaneous concretion, assumes the appearance under which we have it imported from Turkey and the East Indies. It readily mingles with water, by triture, into a milky liquor, which, on standing, deposits a portion of resinous matter, and becomes yellowish: to rectified spirit it yields a gold-colored tincture, which tastes and smells strongly of opoponax. Water distilled from it is impregnated with its smell, but no essential oil is obtained on committing moderate quantities to the operation. See OPOPONAX.

2. *P. sativa*, garden parsnep, is an exceedingly fine esculent root. It is propagated by seeds sown in February or March, in a rich mellow soil, which must be deep dug, that the roots may be able to run deep without hindrance. It is common to sow carrots at the same time, upon the same ground with the parsneps; and, if the carrots are designed to be drawn young, there is no harm in it. The parsneps, when they are grown up a little, must be thinned to a foot distant, and kept clear of weeds. They are finest tasted just at the season when the leaves are decayed: and such as are desirous to eat them in spring should have them taken up in autumn, and preserved in sand. When the seeds are to be saved, some very strong and fine plants should be left four feet distant; and towards the end of August, or beginning of September, the seeds will be ripe: they must then be gathered, and dried on a coarse cloth. They should always be sown the spring following; for they do not keep well. Hints have been given, and experiments made, by agricultural societies, respecting parsneps, to raise them for winter food to cattle. It has long been a custom in some parts of Brittany to sow parsneps in the open field for the food of cattle. Hogs have no other food in all that season, and bullocks and oxen thrive well upon it. Cows fed with parsneps give more milk than with any other winter fodder, and that milk yields better butter than the milk of cows nourished with any other substance. Cattle eat these roots raw, at first sliced lengthwise; and when they begin to tire of them they are cut in pieces, put into a large copper, pressed down there, and boiled with only so much water as fills up the chasms between them. They then eat them very greedily, and continue to like them.

PASTOPHORI. Gr. *πατος*, a couch, and

πεπος, to bring or bear. In archæology, priests of an inferior order among the ancients, who, in solemn processions, carried the statues of the gods. Pocock speaks of two antique monuments extracted from the ruins of Thebes, on one of which are represented twelve pastophori, carrying on their shoulders a vessel, in the middle of which is a little chapel, closed: on the other eight priests of a similar order, bearing in like manner, a ship wherein a god, in human guise, appears seated upon a kind of shrine. It is to be regretted that this traveller cites from memory only, having neglected to procure a drawing of the figures.

Sometimes, also, these pastophori bore in their hands the images of the gods. Caylus has given a drawing of a priest bearing the idol of a divinity enclosed in a sort of little tabernacle.

Clemens Alexandrinus, describing the temples of the Egyptians, says, that, after having passed through magnificent courts, you are conducted to a temple, which is at the farther end of these courts, and then a pastophorus gravely lifts up the veil, which is the door, to show you the deity within; which is nothing but a dog or a cat, or some other animal. Apuleius speaks of the pastophori that carried the Syrian goddess. The Greeks had a college of priests of this description in the time of Sylla. Some antiquaries have affirmed that the name of pastophori was applied to this class by the Greeks from the circumstance of their wearing long mantles, or from the couch or bed (*πατος*) of Venus, which was carried by them in certain ceremonies, or, again, from the veil which covered the divinities, and which was lifted up by the pastophori, to exhibit them to the view of the people.

PASTOPHORIA, the cells or apartments near the temples, where the pastophori lived. There were several lodging rooms for the priests of a similar kind in the temple of Jerusalem.

PASTOR, *n. s.* } Fr. *pasteur*, *pastor*.
PASTORAL, *adj. & n. s.* } *toral*; Latin *pastor*, *pastoralis*. A shepherd; hence the settled minister of a spiritual flock: pastoral is, shepherd-like; rural; relating to the care of souls: as a noun substantive, a poem representing a country or rural life; a bucolic.

Woe be unto the *pastors* that destroy and scatter the sheep of my pasture, saith the Lord.

Jer. xxiii. 1.

In those *pastoral* pastimes, a great many days were spent to follow their flying predecessors.

Sidney

All bishops are *pastors* of the common flock.

Leasey.

The *pastor* maketh suits of the people, and they with one voice testify a general assent thereunto, or he joyfully beginneth, and they with like alacrity follow, dividing between them the sentences wherewith they strive which shall most shew his own, and stir up others zeal to the glory of God.

Hooker.

Their lord and master taught concerning the *pastoral* care he had over his own flock.

Id

The best actors in the world, for tragedy, comedy, history, *pastoral*.

Shakspeare. Hamlet.

Receive this present by the muses made,
The pipe on which the Ascræan *pastor* played.

Dryden

The bishop of Salisbury recommendeth the tenth satire of Juvenal, in his *pastoral* letter, to the serious perusal of the divines of his diocese. *Id.*

There ought to be the same difference between *pastorals* and elegies as between the life of the country and the court; the latter should be smooth, clean, tender, and passionate: the thoughts may be bold, more gay, and more elevated than in *pastoral*. *Walsh.*

The first branch of the great work belonging to a *pastor* of the church was to *catechize*. *South.*

Pastoral is an imitation of the action of a shepherd; the form of this imitation is dramatick or narrative, or mixed of both, the fable simple, the manners not too polite nor too rustick. *Pope.*

A breach in the general form of worship was reckoned too unpopular to be attempted, neither was the expedient then found out of maintaining separate *pastors* out of private purses. *Swift.*

'Tis now become a history little known,
That once we called the *pastoral* house our own. *Cowper.*

PASTRY, *n. s.* } Fr. *pastisserie*, from *paste*.
PASTRY-COOK. } Baked paste; paste designed to be baked: pastry-cook is, one whose trade is to make and sell things baked in paste.

Remember
The seed cake, the *pastories*, and the fermenty pot. *Tusser.*

They call for dates and quinces in the *pastry*. *Shakespeare.*

Beasts of chase, or fowls of game,
In *pastry* built, or from the spit, or boiled,
Gris amber steamed.

Milton's Paradise Regained.

Let never fresh machines your *pastry* try,
Unless grantees or magistrates are by,
Then you may put a dwarf into a pie. *King.*
I wish you knew what my husband has paid to the *pastrycooks* and confectioners. *Arbuthnot.*

PASTURE, *n. s., v. a., & v. n.* } Fr. *pasture*,
PASTURABLE, *adj.* } *pasturage*.
PASTURAGE, *n. s.* } Food for
cattle; food of any kind; culture of the mind:
to pasture is, both to place in, and graze on pasture ground: *pasturable*, fit for pasture: *pasturage*, the art of using or managing pastures; lands grazed by cattle.

He maketh me to lie down in green *pastures*: he leadeth me beside the still waters. *Psa. xxiii. 2.*

I wish there were ordinances, that whosoever keepeth twenty kine, should keep a plough going; for otherwise all men would fall to *pasturage*, and none to husbandry. *Spenser.*

A careless herd
Full of the *pasture* jumps along by him,
And never stays.

Shakespeare. As You Like it.

The inhabitants each *pasture* and each plain
Destroyed have, each field to waste is laid;
In fenced towers bestowed is their grain,
Before thou camest this kingdom to invade.

Fairfax.

The cattle in the fields and meadows green,
Those rare and solitary; these in flocks
Pasturing at once, and in broad herds up sprung.

Milton.

Unto the conservation is required a solid *pasture*, and a food congenious unto nature. *Broune.*

From the first *pastures* of our infant age,
To elder cares and man's severer page
We lash the pupil. *Dryden.*

When there was not room for their herds to feed together, they, by consent, separated and enlarged their *pasture* where it best liked them. *Locke.*

France has a sheep by her to show that the riches of the country consisted chiefly, in flocks and *pasturage*. *Addison.*

Cattle fatted by good *pasturage*, after violent motion, die suddenly. *Arbuthnot on Aliments.*

The *pastures* smile in green array;
There lambs and larger cattle play. *Watts.*
The new tribes look abroad

On nature's common, far as they can see
Or wing their range and *pasture*.

Thomson's Spring.

PASTURE, or PASTURE LAND, is that reserved for feeding cattle. Pasture land is of such advantage to husbandry that many prefer its cultivation even to corn land, because of the small hazard and labor that attend it, and as it lays the foundation for most of the profit that is expected from arable land, because of the manure afforded by the cattle which are fed upon it. Pasture ground is of two sorts; the one is meadow land, which is often overflowed; and the other upland, which lies high and dry. The first of these will produce a much greater quantity of hay than the latter, and will not require manuring or dressing so often: but then the hay produced on the upland is much preferable to the other; as is also the meat which is fed in the upland more valued than that which is fatted in rich meadows; though the latter will make the fatter and larger cattle, as is seen by those which are brought from the low rich lands in Lincolnshire. But, where people are nice in their meat, they will give a much larger price for such as has been fed on the downs, or in short upland pasture, than for the other, which is much larger. Besides this, dry pastures have an advantage over the meadows, that they may be fed all the winter, and are not so subject to be boggy in wet weather; nor will there be so many weeds produced; which are great advantages, and in a great measure recompense for the smallness of the crop. We shall here only mention some methods for improving upland pasture.

The first improvement of upland pasture is by fencing it, and dividing it into small fields of four, five, six, eight, or ten, acres each, planting timber trees in the hedge rows, which will screen the grass from the dry pinching winds of March, which will prevent the grass from growing in large open lands; so that if April proves a dry month, the land produces very little hay; whereas, in the sheltered fields, the grass will begin to grow early in March, and will cover the ground, and prevent the sun from parching the roots of the grass, whereby it will keep growing, so as to afford a tolerable crop, if the spring should prove dry. But in fencing land the enclosure must not be made too small, especially where the hedge-rows are planted with trees; because, when the trees are advanced to a considerable height, they will spread over the land: and, where they are close, will render the grass sour; so that, instead of being of an advantage, it will greatly injure the pasture. The next improvement of upland pasture is to make turf good, where, either from the badness of the soil or want of proper care, the grass has been destroyed by rushes,

bushes, or mole-hills. Where the surface of the land is clayey and cold, it may be improved by paring it off, and burning it; but if it is a hot sandy land, then chalk, lime, marl, or clay, are very proper manures to lay upon it; but this should be laid in pretty good quantities, otherwise it will be of little service to the land. If the ground is over-run with bushes or rushes, it will be of great advantage to the land to grub them up towards the latter part of summer, and, after they are dried, to burn them, and spread the ashes over the ground just before the autumnal rains; at which time the surface of the land should be levelled, and sown with grass-seed, which will come up in a short time, and make good grass the following spring. So, also, when the land is full of mole-hills, these should be pared off, and either burnt for the ashes, or spread immediately on the ground where they are pared off, observing to sow the bare patches with grass-seed just as the autumnal rains begin. Where the land has been thus managed, it will be of great service to roll the turf in the months of February and March with a heavy wood roller; always observing to do it in moist weather, that the roller may make an impression; this will render the surface level, and make it much easier to mow the grass than when the ground lies in hills; and will also cause the turf to thicken, so as to have what the people usually term a good bottom. The grass likewise will be the sweeter for this husbandry, and it will be a great help to destroy weeds. Another improvement of upland pastures is the feeding of them; for, where this is not practised, the land must be manured at least every third year; and, where a farmer has much arable land in his possession, he will not care to part with his manure to the pasture. Therefore every farmer should endeavour to proportion his pasture to his arable land, especially where manure is scarce, otherwise he will soon find his error; for the pasture is the foundation of all the profit which may arise from the arable land. Whenever the upland pastures are mended by manure, there should be a regard had to the nature of the soil, and a proper sort of manure applied: as, for instance, all hot sandy land should have a cold manure; neat's dung and swine's dung are very proper for such lands; but, for cold lands, horse dung, ashes, and other warm manures, are proper. And, when these are applied, it should be done in autumn, before the rains have soaked the ground, and rendered it too soft to cart on; and it should be carefully spread, breaking all the clods as small as possible, and then harrowed with bushes, to let it down to the roots of the grass. When the manure is laid on at this season, the rains in winter will wash down the salts, so that the following spring the grass will receive the advantage of it. There should also be great care taken to destroy the weeds in the pasture every spring and autumn: for, where this is not practised, the weeds will ripen their seeds, which will spread over the ground, and thereby fill it with such a crop of weeds as will soon overbear the grass, and destroy it; and it will be very difficult to root them out afterwards; especially ragwort, and such other weeds as have

down adhering to their seeds. The grasses sown in these upland pastures seldom degenerate, if the land is tolerably good: whereas the low meadows, which are overflowed in winter, in a few years turn to a harsh rushy grass, though the upland will continue a fine sweet grass for many years without renewing. There is no part of husbandry of which the farmers are in general more ignorant than that of the pasture: most of them suppose that, when old pasture is ploughed up, it can never be brought to have a good sward again; so their common method of managing their land after ploughing is to sow with their crop of barley some grass seeds as they call them; that is, either the red clover, which they intend to stand two years after the corn is taken off the ground, or rye-grass mixed with trefoil; but as all these are at most but biennial plants, whose roots decay soon after their seeds are perfected, so the ground, having no crop upon it, is again ploughed for corn; and this is the constant round which the lands are employed in by the better sort of farmers. But, whatever may have been the practice of these people, it is certainly possible to lay down lands which have been in tillage with grass, in such a manner as that the sward shall be as good, if not better, than any natural grass, and of as long duration. But this is never to be expected in the common method of sowing a crop of corn with the grass seeds; for, wherever this has been practised, if the corn has succeeded well, the grass has been very poor and weak; so that, if the land has not been very good, the grass has scarcely been worth saving; for the following year it has produced but little hay, and the year after the crop is worth little, either to mow or feed. Nor can it be expected to be otherwise; for the ground cannot nourish two crops; and if there were no deficiency in the land, yet the corn, being the first and most vigorous of growth, will keep the grass from making any considerable progress; so that the plants will be extremely weak, and but very thin, many of them which come up in the spring being destroyed by the corn; for, whenever there are roots of corn, it cannot be expected there should be any grass. Therefore the grass must be thin; and if the land is not in good heart to supply the grass with nourishment, that the roots may branch out after the corn is gone, there cannot be any considerable crop of clover; and, as their roots are biennial, many of the strongest plants will perish soon after they are cut; and the weak plants, which had made but little progress before, will be the principal part of the crop for the succeeding year; which is many times not worth standing. Therefore, when ground is laid down for grass, there should be no crop of any kind sown with the seeds; or at least the crop should be sown very thin, and the land should be well ploughed and cleaned from weeds, otherwise the weeds will come up first, and grow so strong as to overbear the grass, and, if they are not pulled up, will entirely spoil it. The best season to sow the grass seeds upon dry land, when no other crop is sown with them, is about the middle of September, or sooner if there is an appearance of rain: for the ground being then warm, if there happen some good

showers of rain after the seed is sown, the grass will soon make its appearance, and get sufficient rooting in the ground before winter: so will not be in danger of having the roots turned out of the ground by frost especially if the ground is well rolled before the frost comes on, which will press it down, and fix the earth close to the roots. Where this has not been practised, the frost has often loosened the ground so much as to let in the air to the roots of the grass, and done it great damage; and this has been brought as an objection to the autumnal sowing of grass; but it will be found to have no weight if the above direction is practised: nor is there any hazard of sowing the grass at this season, but that of dry weather after the seeds are sown; for if the grass comes up well, and the ground is well rolled in the end of October, or the beginning of November, and repeated again the beginning of March, the sward will be closely joined at bottom, and a good crop of hay may be expected the same summer. But where the ground cannot be prepared for sowing at that season, it may be performed in the middle or end of March, according as the season is early or late; for, in backward springs, and in cold land, we have often sowed the grass in the middle of April with success; but there is danger, in sowing late, of dry weather, and especially if the land is light and dry; for we have seen many times the whole surface of the ground removed by strong winds at that season; so that the seeds have been driven in heaps to one side of the field. Therefore, whenever the seeds are sown late in the spring, it will be proper to roll the ground well soon after the seeds are sown, to settle the surface, and prevent its being removed. The sorts of seeds which are the best for this purpose, are, the best sort of upland hay seeds, taken from the cleanest pastures, where there are no bad weeds; if this seed is sifted, to clean it from rubbish, three bushels will be sufficient to sow an acre of land. The other sort is the trifolium pratense album, commonly called white Dutch clover, or white honeysuckle grass. Of this seed eight pounds will be enough for one acre. The grass seed should be sown first, and then the Dutch clover seed may be afterwards sown; but they should not be mixed, because the clover-seeds being the heaviest will fall to the bottom, and consequently the ground will be unequally sown. When the seeds are come up, if the land should produce many weeds, these should be drawn out before they grow so tall as to overbear the grass; for where this has been neglected, the weeds have taken such possession of the ground as to keep down the grass, and starve it; and, when these weeds have been suffered to remain until they have shed their seeds, the land has been so plentifully stocked with them as entirely to destroy the grass; therefore it is a principal care in husbandry never to suffer weeds to grow on the land. If the ground is rolled two or three times at proper distances after the grass is up, it will press down the grass, and cause it to make a thicker bottom: for, as the Dutch clover will put out roots from every joint of the branches which are near the ground, so, by pressing down of the stalks, the roots will mat so closely together as to form a sward

so thick as to cover the whole surface of the ground, and form a green carpet, and will better resist the drought. For if we examine the common pastures in summer, in most of which there are patches of this white honeysuckle grass growing naturally, we shall find these patches to be the only verdure remaining in the fields. And this the farmers in general acknowledge is the sweetest feed for all sorts of cattle; yet they never thought of propagating it by seeds, nor has this been long practised in England. As the white clover is an abiding plant, so it is certainly the very best sort to sow, where pastures are laid down to remain; for as the hay-seeds which are taken from the best pastures will be composed of various sorts of grass, some of which may be but annual, and others biennial; so, when these go off, there will be many and large patches of ground left bare and naked, if there is not a sufficient quantity of the white clover to spread over and cover the land. Therefore a good sward can never be expected where this is not sown; for in most of the natural pastures we find this plant makes no small share of the sward; and it is equally good for wet and dry land, growing naturally upon gravel and clay in most parts of England: which is a plain indication how easily this plant may be cultivated to great advantage in most sorts of land throughout this kingdom. Therefore the true cause why the land which has been in tillage is not brought to a good turf again, in the usual method of husbandry, is, from the farmers not distinguishing which grasses are annual from those which are perennial; for, if annual or biennial grasses are sown, these will of course soon decay; so that, unless where some of their seeds may have ripened and fallen, nothing can be expected on the land but what will naturally come up. Therefore this, with the covetous method of laying down the ground with a crop of corn, has occasioned the general failure of increasing the pasture in many parts of Britain, where it is now much more valuable than any arable land. After the ground has been sown in the manner before directed, and brought to a good sward, the way to preserve it good is, by constantly rolling the ground with a heavy roller, every spring and autumn, as has been before directed. This piece of husbandry is rarely practised by farmers; but those who do, find their account in it, for it is of great benefit to the grass. Another thing should also be carefully performed, which is, to cut up docks, dandelion, knapweed, and all such weeds, by their roots, every spring and autumn; this will increase the quantity of good grass, and preserve the pastures in beauty. Dressing of these pastures every third year is also a good piece of husbandry; for otherwise it cannot be expected the ground should continue to produce good crops. Besides this, it will be necessary to change the seasons of mowing, and not to mow the same ground every year, but to mow one season and feed the next: for, where the ground is every year mown, it must be constantly dressed, as are most of the grass grounds in the environs of London, otherwise the ground will be soon exhausted.

PASTY, *n. s.* Fr. *paste*. A pie of crust without a dish.

Of the paste a coffin will I rear,
And make two *pasties* of your shameful heads.

Shakspeare.

I will confess what I know; if ye pinch me like a *pasty* I can say no more.

Id.

If you'd fright an alderman and mayor,
Within a *pasty* lodge a living hare.

King.

A man of sober life,

Not quite a madman though a *pasty* fell.

And much too wise to walk into a well. *Pope.*

What say you—a *pasty*, it shall, and it must,
And my wife little Kitty is famous for crust.

Goldsmith.

PAT, *adj., n. s., & v. a.* } Belg. *pas*. (Skinner.)

PATLY, *adv.* } Dr. Johnson says Fr.

patte, is a foot, and thence pat may be a blow with the foot. Smart; fit; convenient; suited: hence a smart, quick blow; a tap: to strike lightly or smartly: patly is, suitably, with exact fitness.

Pat, pat; and here's a marvellous convenient place for our rehearsal.

Shakspeare. Midsummer Night's Dream.

Now I might do it *pat*, now he is praying.

Shakspeare.

Children prove, whether they can rub upon the breast with one hand, and *pat* upon the forehead with another, and straightways they *pat* with both.

Bacon's Natural History.

They never saw two things so *pat*,

In all respects as this and that.

Hadibras.

If we do search about for a case to that which we do now commemorate, we should, perhaps, hardly find one more *patly* such, than is that which is implied in this psalm.

Barrow.

The least noise is enough to disturb the operation of his brain; the *pat* of a shuttlecock, or the creaking of a jack will do.

Collier.

Zuinglius dreamed of a text, which he found very *pat* to his doctrine of the Eucharist. *Atterbury.*

Gay *pats* my shoulder, and you vanish quite.

Pope.

He was sorely *put* to it at the end of a verse,
Because he could find no word to come *pat* in.

Swift.

PATÆCI, in mythology, images of gods which the Phœnicians carried on the prows of their galleys. Herodotus, lib. iv., calls them *πατῆρες*. The word is Phœnician, and derived from *pethica*, i. e. titulus, a title, or mark of dignity. See Bochart's Chanaan, lib. ii. cap. 3. But Scaliger derives it from Heb. *patach*, to engrave. Morin derives it from *μῆνec*, monkey, this animal having been an object of worship among the Egyptians, and hence might have been honored by their neighbours. Mr. Elsner has observed, that Herodotus does not call the *patæci* gods, but that they obtained this dignity from the liberality of Hesychius and Suidas, and other ancient lexicographers, who place them at the stern of ships; whereas Herodotus placed them at the prow. Scaliger, Bochart, and Selden, have taken some pains about this subject. Mr. Morin has also given us a learned dissertation on this head in the *Memoires de l'Acad. des Inscript. et Belles Lettres*, tom. i.

PATAGONIA, a name given to that part of South America which extends from Chili and Paraguay to the extremity of this continent south-west, that is, from 35° almost to 54° of

latitude: being surrounded by Chili, Paraguay, the South and North Seas, and the Straits of Magellan, which separate it from Terra del Fuego, and extend about 116 leagues in length from sea to sea, but only from half a league to three or four in breadth. This country had the name of Terra Magellanica, from Magellan. The lofty mountains of Andes, which are covered with snow a great part of the year, crossing the country from north to south, the air is much colder than in the north, under the same latitude. Towards the north it is covered with wood, but on the south not a single tree fit for any mechanical purpose is to be seen; yet there is good pasture, and incredible numbers of wild horned cattle and horses. The east coast is mostly low land, with few or no good harbours; one of the best is Port St. Julian. Patagonia is inhabited by a variety of Indian tribes, as the Patagons, from which the country takes its name; the Pampas, the Cossares, &c., of whom we know very little. From the accounts of commodore Byron and his crew, and the testimonies of other navigators, some of them were long said to be of a gigantic stature, and clothed with skins; others to go almost quite naked, notwithstanding the inclemency of the climate. Some of them who live about the Straits are perfect savages: but those with whom Byron and his people conversed were gentle and humane. They live on fish and game, and what the earth produces spontaneously. On the coasts of Patagonia lie a great number of islands. A vast deal has been said respecting the stature of the Patagians, by people of different nations, and on various occasions. Mr. Charles Clarke, who was on board Byron's ship in 1764, says that some of them are certainly nine feet, if they do not exceed it. Captain Wallis, on the other hand, who went out to the Straits of Magellan after Byron's return, found that the tallest man among them measured only six feet seven inches high; and several were within an inch or two as tall; but the ordinary size was from five feet ten inches to six feet.

Bougainville, who sailed along the coast in 1767, says, 'the natives have a good shape, of those we saw, as to broadness of their shoulders, the size of their head, and the thickness of their limbs; they are robust and well-fed; their nerves are braced, and their muscles are strong and sufficiently hard. They are men left entirely to nature, and supplied with food abounding in nutritive juice, by which means they are come to the full growth they are capable of. Their figure is not coarse or disagreeable; on the contrary, many of them are handsome. Their face is round, and somewhat flatfish; their eyes are very fiery; their teeth white, and are somewhat too large. At Paris they have long black hair, tied up on the top of their heads. I have seen some of them with long but thin whiskers. Their color is bronzed, as it is in all the Americans without exception, both in those who inhabit the torrid zone, and those who are born in the temperate and frigid zones. Some of them had their cheeks painted red. Their language seemed very delicate; and nothing gave us reason to fear any ferocity from them. The dress of these Patagians is very nearly the

same with that of the Indians of Rio de la Plata. They have merely a piece of leather which covers their natural parts, and a great cloak of guanaco, or sorillos skins, which is fastened round the body with a girdle. This cloak hangs down to their heels, and they generally suffer that part which is intended to cover the shoulders to fall back; so that, notwithstanding the rigor of the climate, they are almost always naked from the girdle upward. Habit has certainly made them insensible to cold; for, though we were here in summer, Reaumur's thermometer was only one day risen to 10° above the freezing point. These men have a kind of half-boots, of horse-leather, open behind; and two or three of them had on the thigh a copper ring about two inches broad. Some of my officers likewise observed that two of the youngest among them had such beads as are employed for making necklaces. The only arms which we observed among them are two round pebbles fastened to the two ends of a twisted gut, like those which are made use of in all this part of America. They had likewise little iron knives, of which the blade was about an inch and a half broad; these knives were of an English manufacture, and were certainly given to them by Mr. Byron. Their horses, which are small and very lean, were bridled and saddled in the same manner as those belonging to the inhabitants of Rio de la Plata. One of the Patagonians had at his saddle gilt nails, wooden stirrups, covered with plates of copper, a bridle of twisted leather, and a white Spanish harness. The principal food of the Patagonians seems to be the marrow and flesh of guanacos and vicuñas; many of them had quarters of this flesh fastened on their horses, and we saw them eat pieces of it quite raw. They had likewise little nasty dogs with them, which, like their horses, drink sea-water; it being a very scarce thing to get fresh water on this coast, or even in the country. None of them had any apparent superiority over the rest; nor did they show any kind of esteem for two or three old men who were in the troop. It is remarkable that several of them pronounced the Spanish words *manano*, *muchacha*, *bueno*, *chico*, *capitan*. I believe this nation leads the life of Tartars. Besides rambling through the immense plains of South America, men, women, and children, being constantly on horseback pursuing the game or the wild beasts with which those plains abound, dressing and covering themselves with skins, they bear probably yet this resemblance with the Tartars, that they pillage the caravans of travellers. I shall conclude this article by adding, that we have once since found a nation in the South Pacific Ocean, which is taller than the Patagonians. The soil in the place we landed at is very dry, and in that particular bears great resemblance with that of the Malouines. The botanists have likewise found almost all the same plants in both places. The sea shore was surrounded with the same sea-weed, and covered with small shells. Here are no woods, but only some shrubs.

These tribes have been described by Falkner, a South American missionary, who represents the Puelches as divided into three or four tribes,

the most southern of which are the Tehuels, who extend on the east to the strait, as the Huilliches do on the west. The Tehuels are the proper Patagonians, who are a warlike tribe, but courteous and humane. According to this writer, their complexion is a copper-color, like the other American Indians. Their hair is straight, black, and coarse, and tied back with a string; but neither sex wear any covering on their heads. They are well made, robust, bony, and very strong; though their hands and feet are small in proportion to their size. They are generally clad in the skins of the guanaco, sewed together into pieces of about six feet long and five broad, which are wrapped round their bodies with the hairy side inwards, and which forms a kind of cloak, fastened round the waist with a girdle. Some of them wear the *puncho*, which is made of the wool of the guanaco, and all have a kind of tight drawers, with buskins that reach from the middle of the leg to the instep, and pass under the heel, while the rest of the foot is uncovered. 'This cloak hangs down to their heels, and they generally suffer that part which is intended to cover the shoulders to fall back; so that, notwithstanding the rigor of the climate, they are always naked from the girdle upward. Habit has certainly made them insensible to cold; for, though we were here in summer, Reaumur's thermometer was only 10° above the freezing point.'

PATAGONULA, in botany, a genus of the monogynia order, and pentandria class of plants: natural order forty-first, *asperifoliae*. The characters are these: the cup is an extremely small perianth, divided into five segments, and remains after the flower is fallen; the flower consists of a single petal, with almost no tube, the margin of which is divided into five acute oval segments; the stamina are five filaments of the length of the flower; the anthers simple; the germen of the pistil is oval and pointed; the style is slender and slightly bifid, its ramifications are also bifid; this is of the same length with the stamina, and remain when the flower is fallen; the stigmata are simple; the fruit is an oval and pointed capsule standing on a large cup, made up of five long segments emarginated or rimmed round their edges; the seeds of this plant are yet unknown; but the construction of the cup, in which the capsule stands, is alone a sufficient distinction for this genus. There is but one species.

PATAN, a town of Hindostan, in the district of Harowty, Ajmeer. It is situated on the south side of the Chambul, and is the capital of a district of thirty-two villages, belonging to the Mahrattas. It contains a handsome temple, dedicated to Vishnu, and a palace belonging to the rajah. Long. 75° 50' E., lat. 25° 17' N.

PATANY, a port on the eastern coast of the peninsula of Malacca, near the mouth of the gulf of Siam. It is situated about six miles up a river falling into a good roadstead. The English established a factory here in 1610, where they imported Surat and Coromandel cloths, to the value of 10,000 dollars; but they withdrew it in 1623. The trade is now in the hands of the Chinese. European goods are received from

Batavia; the exports consist of gold dust, canes, rattans, dragon's blood, &c. Long. 101° 40' E., lat. 6° 50' N.

PATAPSCO, a river of Maryland, which runs south-east into Chesapeake Bay, between North Point and Bodkin's Point. It is navigable to Fell's Point, in Baltimore, fourteen miles, for ships drawing eighteen feet water.

PATARA, the capital of Lycia, east of the mouth of the Xanthus; famous for a temple and oracle of Apollo. Livy, Mela. For the six winter months, Apollo gave answers at Patara; and for the six summer at Delos (Virgil, Servius); these are the Lyciæ Sortes of Virgil. The town was situated in a peninsula, called Lyciorum Chersonesus. Stephanus. There is still a place on the sea-coast of Caramania, the supposed Patara of history. The theatre contains thirty-four rows of marble seats entire, and is distinguished also by the superior preservation of its proscenium. The circuit of the walls may be traced, and temples, altars, pedestals, and fragments of sculpture, are in profusion. It is almost deserted, however, as a habitation of men.

PATAVINITY, among critics, a peculiarity of Livy's diction; from Patavium, the place of his nativity; but wherein this patavinity consists they are by no means agreed. In all probability it is one of those delicacies that are lost in a dead language.

PATAVIUM, a town of Gallia Transpadana, on the left or north bank of the Medoacus Minor; founded by Antenor the Trojan Mela, Virgil, Seneca. Now called Padua.

PATCH, *v. n. & n. s.* } Ital. *pezza*; Span. }
 PATCHER, *n. s.* } *pieza*, or, as Minsheu }
 PATCH'ERY, } suggests, more probably }
 PATCH'WORK. } a corruption of Borch, }
 which see. To mend or cover with new pieces; hence make up of different pieces or shreds; mend clumsily; as the ladies formerly endeavoured to do with respect to their faces, by decorating them with small spots of black silk: a patch is, a piece sewed on or inverted with a view to mending or variegating a portion of work; a small spot of black silk stuck on the face; a small piece of ground: a patcher, he or she who patches: patchery, botchery; bungling work; forgery: patchwork is work made by inserting pieces of different colors or patterns in the same design.

Any thing mended is but *patched*. *Shakespeare.*

Patches set upon a little breach,
 Discredit more in hiding of the flaw,
 Than did the flaw before it was so *patched*. *Id.*

We go to gain a little *patch* of ground,
 That hath in it no profit but the name. *Id.*

What a pied ninny's this? thou scurvy *patch*! *Id.*

You hear him cogg, see him dissemble,
 Know his gross *patchery*, love him, and feed him,
 Yet remain assured that he's a made-up villain. *Id.*

If we seek to judge of those times, which the scriptures set us down without error, by the reigns of the Assyrian princes, we shall but *patch* up the story at adventure, and leave it in confusion.

Raleigh's History.

If to every common funeral,
 By your eyes martyred, such grace were allowed,
 Your face would wear not *patches*, but a cloud.

How! providence! and yet a Scottish crew!
 Then madam Nature wears black *patches* too. *Suckling.*

Physick can but mend our crazy state,
Patch an old building, not a new create. *Cleveland.*

His glorious end was a *patched* work of fate,
 Ill sorted with a soft effeminate life. *Dryden.*

If the shoe be ript, or *patches* put;
 He's wounded! see the plaster on his foot. *Id.*

They suffer their minds to appear in a pie-bald
 livery of coarse *patches* and borrowed shreds, such as
 the common opinion of those they converse with
 clothe them in. *Loeke.*

Broken limbs, common prudence sends us to the
 surgeons to piece and *patch* up. *L'Estrange.*

In the middle boxes were several ladies who
patched both sides of their faces. *Addison's Spectator.*

They were *patched* differently, and cast hostile
 glances upon one another, and their *patches* were
 placed in different situations, as party signals, to
 distinguish friends from foes. *Addison.*

Enlarging an author's sense, and building fancies
 of our own upon his foundation, we may call para-
 phrasing; but more properly changing, adding,
patching, piecing. *Felton.*

There is that visible symmetry in a human body,
 as gives an intrinsick evidence that it was not formed
 successively and *patched* up by piece-meal. *Bentley.*

This the morning omens seemed to tell:
 Thrice from my trembling hand the *patch*-box fell. *Pope.*

Foreign her air, her robe's discordant pride
 In *patchwork* fluttering. *Id.*

We begged her but to *patch* her face,
 She never hit one proper place. *Swift.*

Whoever only reads to transcribe shining remarks,
 without entering into the genius and spirit of the
 author, will be apt to be misled out of the regular
 way of thinking; and all the product of all this will
 be found a manifest incoherent piece of *patchwork*. *Id.*

To *patchwork* learned quotations are allied,
 Both strive to make our poverty our pride. *Young.*

Vain hope! in *patch-work* of terrestrial grain,
 To be received into the courts above!
 As vain, as towards yonder suns to soar,
 On wing of waxen plumage, melting soon. *Pollak.*

PATCHOW ISLANDS, a group of islands on the coast of China, the eastern extremity of which is formed by Typinsan, a large island, having on its north side a reef, on which the Providence, captain Broughton, was wrecked in 1797, in long. 125° 11' E., lat. 25° 6' N. These islands are tributary to the great Liquejo.

PATE, *n. s.* Derived by Skinner from Fr. *tête*, more probably from the Ital. or Span. *patena*, a skull. The head. Now commonly used in contempt or ridicule; but anciently in serious language.

Behold the despaire,
 By custome and covetous *pates*,
 By gaps and opening of gates. *Tusser.*
 'Senseless man, that himself doth hate,
 To love another;
 Here take thy lover's token on thy *pate*. *Spenser.*

He is a traitor, let him to the tower,
And crop away that factious *pate* of his.
Shakespeare.

That sly devil,
That broker that still breaks the *pate* of faith,
That daily breakvow. *Id.*

Thank you gentler fate,
That, for a bruised or broken *pate*,
Has freed you from those knobs that grow
Much harder on the married brow. *Hudibras.*
If only scorn attends men for asserting the church's
dignity, many will rather chuse to neglect their duty,
than to get a broken *pate* in the church's service.
South.

No; not a single thought like that
Employs his philosophic *pate*,
Or troubles it at all. *Cowper.*

PATELLA, in anatomy (from *patina*, a dish, so named from its shape). *Rotula*. The kneepan. A small flat-bone, somewhat resembling the common figure of the heart, with its point downwards, and which is placed at the fore-part of the joint of the knee. Anteriorly it is a little convex, and rough for the insertion of muscles and ligaments; posteriorly it is smooth, covered with cartilage, and divided by a middle longitudinal ridge into two slightly concave surfaces, of which the external one is the largest and deepest. It is thus exactly adapted to the pulley of the *os femoris*. The edges of this posterior surface are rough and prominent where the capsular ligament is attached, and below is a roughness at the point of the bone, where the upper extremity of a strong tendinous ligament is fixed, which joins this bone to the tuberosity at the upper end of the tibia. This ligament is of considerable thickness, about an inch in breadth, and upwards of two inches in length. See **ANATOMY**.

PATELLA, in zoology, the limpet, a genus belonging to the order of *vermes testacea*; the animal is of the snail kind. The shells are of that class which is called *univalves*; they have no contour, and are in the form of little pointed cones. They are always attached to some hard body. Their summit is sometimes acute, sometimes obtuse, flattened, turned back, or perforated. The rock, or other hard body to which they are always found adhering, serves as a kind of second or under shell to preserve them from injury; and for this reason *Aldrovandus* and *Rondelet* have classed them among the bivalves; but in this they have not been followed. There are very many species of this genus, which are principally distinguished by peculiarities in their shells. Dr. Rees gives 250 in his *Cyclopædia*.

PATELLA, in entomology, is also a name given by Lister and others to a little husk or shell, found on the bark of the cherry, plum, rose, and other trees, containing an animal within, and useful in coloring. These *patellæ* are of the form of globes, except when they adhere to the tree, and are for the most part of a shining chestnut color. The husk itself strikes a very fine crimson color on paper, and within it is found a white maggot which is of no value: this, in time, hatches into a very small but beautiful bee. The size of this bee is about half that of an ant. They have a sting like bees,

and three spots in a triangle on the forehead, supposed to be eyes. They are black, and have a large round whitish or pale yellow spot on the back. The upper pair of wings are shaded and spotted, but the under pair are clear. It might be worth while to try whether the color they yield might not be useful. The deepest colored husks afford the finest and deepest purple; they must be used while the animal in them is in the maggot form; for when it is changed into the bee state the shell is dry and colorless. Lister, who first observed these *patellæ*, went so far on comparing them with the common *kermes* as to assert that they were of the same nature with that production; but his account of their being the workmanship of a bee, to preserve her young maggot in, is not agreeable to the true history of the *kermes*; for that is an insect of a very peculiar kind. It is possible that these *patellæ* may be the same genus of animals with the *kermes*, but then it produces its young within this shell or husk, which is no other than the skin of the body of the mother animal; but as there are many flies whose worms or maggots are lodged in the bodies of other animals, perhaps this little bee may lay its egg in the body of the proper insect, and the maggot hatched from that egg may eat up the proper progeny, and, undergoing its own natural changes there, issue out at length in form of the bee. This may have been the case in some few which Dr. Lister examined and he may have been misled by this to suppose it the natural change of the insect.

PATEN, *n. s.* Lat. *patina*. A plate. Not in use.

The floor of heaven
Is thick inlaid with *patens* of bright gold;
There's not the smallest orb which thou behold'st,
But in his motion like an angel sings. *Shakespeare.*

PATENT, *adj. & n. s.* } Fr. *patent*; Lat. *pa-*
PATENTE, *n. s.* } *tens* (opened). Open
to all; as letters patent: hence a writ or order conferring a privilege or exclusive right: *patentee* is one who is possessed of such right by public law or orders.

In Ireland, where the king disposes of bishopricks merely by his letters *patent*, without any *Comte d'Elire*, which is still kept up in England; though to no other purpose than to shew the ancient right of the church to elect her own bishops. *Lecky.*

If you are so fond over her iniquity, give her *patent* to offend: if it touch not you, it comes near *no* body. *Shakespeare.*

So will I grow, so live, so die,
Ere I will yield my virgin *patent* up
Unto his lordship.

Id. Midsummer Night's Dream.
If his tenant and *patentee* dispose of his gift, without his kingly consent, the lands shall revert to the king. *Bacon.*

Madder is esteemed a commodity that will turn to good profit; so that, in king Charles the first's time, it was made a *patent* commodity. *Mortimer.*

We are censured as obstinate, in not complying with a royal *patent*. *Swift.*

In the *patent* granted to lord Dartmouth the securities obliged the *patentes* to receive his money back upon every demand. *Id.*

PATER (Paul), a learned Hungarian, born at Menersdorf, in 1659; and driven from his

country, when young, on account of his being a Protestant. The duke of Wolfenbutter made him his librarian, and he became professor of mathematics in the college of Dantzic; where he died in 1724. He published many works on literature and philosophy.

PATER PATRATUS, the first and principal person in the ancient college of heralds called *Feciales*. Some say he was a constant officer and perpetual chief of that body; and others suppose him to have been a temporary minister, elected upon account of making peace or denouncing war, which were both done by him. See *FECIALES*.

PATERA, in antiquity (from *pateo*, Lat. to be open), a large open goblet or vessel, used by the Romans in their sacrifices; wherein they offered their consecrated meats to the gods, and wherewith they made libations. On medals the patera is seen in the hands of several deities; and often in those of princes, to mark the sacerdotal authority joined with the imperial, &c. F. Joubert observes that, besides the patera, there is frequently an altar upon which the patera seems to be pouring its contents. The patera was of gold, silver, marble, brass, glass, or earth; and they used to enclose it in urns with the ashes of the deceased, after it had served for the libation of the wine and liquors at the funeral. The patera is an ornament in architecture, frequently seen in the Doric frieze, and the tympan of arches; and they are sometimes used by themselves to ornament a space. In this case it is common to hang a string of husks or drapery over them; sometimes they are much enriched with foliage, and have a mask or a head in the centre. In the Royal Cabinet of Antiquities in Paris is a most magnificent one in gold, of which Millin has given a description (together with a drawing) in his *Monumens Antiques Inédits*. This elegant monument of art is nine inches and upwards in diameter. The subject represented on it is a contest between Hercules and Bacchus as to which could drink most. The contesting deities have drained all their drinking cups except the last, which Bacchus is about to empty at one draught. He holds the vase with a firm hand, and looks scornfully on his vanquished rival, who appears to be sinking down from the effects of intoxication. This beautiful vase was discovered at Rennes, in Brittany, on the 26th of March, 1774, by some masons who were at work in pulling down a chapter house.

PATERCULUS (Caius Velleius), an ancient Roman historian, who flourished in the reign of Tiberius Cæsar, was born A. U. C. 735. His grandfather espoused the party of Tiberius Nero, the emperor's father; but, being old and infirm, and not being able to accompany Nero when he retired from Naples, he killed himself. His father was a soldier of rank, and Paterculus was a military tribune when Caius Cæsar, a grandson of Augustus, had an interview with the king of the Parthians, in an island of the Euphrates, in 753. He commanded the cavalry in Germany under Tiberius, and accompanied that prince for nine years' successively in all his expeditions. He received honorable rewards from

him; but was preferred to no higher dignity than the prætorship. The praises he bestows upon Sejanus make it probable that he was a friend of this favorite, and was involved in his ruin. He died A. U. C. 784, when in his fiftieth year. He wrote an Abridgment of the Roman History in two books, in which many particulars are related that are nowhere else to be found. It was first published from the MS. of Morhauc, by Rhenanus, at Basil, in 1520; afterwards by Lipsius at Leyden in 1581; by Gerard Vossius in 1639; by Boeclerus at Strasburg in 1642; by Thysius and others; and lastly, by Peter Burman at Leyden, 1719, in 8vo. To the Oxford edition in 1693, 8vo., were prefixed the *Annales Velleiani* of Mr. Dodwell, which show a great knowledge of antiquity. Lipsius censures him severely for his praise of Tiberius.

PATERNAL, *adj.* } *Fr. paternel*; *Lat. pater-nity*, *n. s.* } *ternus*. Like a father; having the relation of, pertaining to, or received from a father: *paternity*, is the relation or quality of a father.

I disclaim all my *paternal* care,
Propinquity and property of blood,
And as a stranger to my heart and me
Hold thee. *Shakespeare. King Lear.*

The world, while it had scarcity of people, underwent no other dominion than *paternity* and eldership. *Ruleigh.*

Grace signifies the *paternal* favour of God to his elect children. *Hammond.*

Admonitions fraternal or *paternal* of his fellow Christians or governors of the church. *Id.*

They spend their days in joy unblamed; and dwell

Long time in peace, by families and tribes,
Under *paternal* rule. *Milton's Paradise Lost.*

Men plough with oxen of their own
Their small *paternal* field of corn. *Dryden.*

Retreat betimes
To thy *paternal* seat, the Sabine field,
Where the great Cato toiled with his own hands. *Addison.*

A young heir kept short by his father, might be known by his countenance; in this case, the *paternity* and filiation leave very sensible impressions. *Arbushnot.*

This origination in the divine *paternity*, as bishop Pearson speaks, hath anciently been looked upon as the assertion of the unity. *Waterland.*

PATERSON (Samuel), was born in 1725. His father died when he was very young, and, his guardian failing, he lost his fortune. Being lame, and not having been brought up to any profession, he chose that of a bookseller, in which he was unsuccessful. He then commenced auctioneer, and, after struggling with much distress, was appointed librarian to the marquís of Lansdown. He died 29th of October, 1802. He wrote and published, 1. A dissertation on the equestrian figure of the George and Garter; by Dr. Pertingall, 1753. 2. The Travels of Caiat Junior, 1767. 3. Janeriana, or a Book of Scraps. 4. The Templar, a weekly paper; and 5. Speculations on Law and Lawyers. But what rendered him chiefly famous was his talent at drawing up catalogues. The catalogues which he made of many valuable libraries sell at high prices.

PATH, *n. s.* } *Sax. paþ; Wel. paith.*
PATHLESS, *adj.* } Way: road; track, particu-
PATHWAY, *n. s.* } larly a foot road or track;
 passage: pathless is, untrodden; unmarked by
 paths; desert; path-way, a road particularly
 for foot passengers; any passage.

For darkness, where is the place thereof? that thou
 shouldst know the *paths* to the house thereof.

Job xxxviii. 20.

In the way of righteousness is life, and in the
pathway thereof there is no death. *Prov. xii. 28.*

Ask thou the citizens of *pathless* woods;
 What cut the air with wings, what swim in floods?

Sandys.

Alas, that love, whose view is muffled still,
 Should without eyes see *pathways* to his ill.

Shakespeare.

Like one that had been led astray
 Through the heaven's wide *pathless* way.

Milton.

In fortunes's empire blindly thus we go,
 And wander after *pathless* destiny,
 Whose dark resorts since prudence cannot know,
 In vain it would provide. *Dryden.*

On the glad earth, the golden age renew,
 And thy great father's *path* to heaven pursue.

Id.

The dewy *paths* of meadows we will tread. *Id.*
 There is but one road by which to climb up, and
 they have a very severe law against any that enters
 the town by another *path*, lest any new one should
 be worn on the mountain. *Addison on Italy.*

Through mists obscure she wings her tedious way,
 Now wanders dazzled with too bright a day;
 And from the summit of a *pathless* coast
 Sees infinite, and in that sight is lost. *Prior.*

When in the middle *pathway* basks the snake;
 O lead me, guard me from the sultry hours. *Gay.*

The *path* prescribed inviolably kept,
 Upbraids the lawless sallies of mankind.

Young.

PATHETIC, *adj.* } *Fr. pathétique; Greek*
PATHETICAL, } *πάθητικός. Affecting the*
PATHETICALLY, } passions; passionate;
PATHETICALNESS, } moving: the adjective
 and noun substantive correspond.

His page that handful of wit;
 'Tis most *pathetical*. *Shakespeare.*

These reasons so *pathetically* urged and so admi-
 rably raised by the prosopopeia of nature, speaking
 to her children with so much authority, deserve the
 pains I have taken. *Dryden.*

How *pathetick* is that expostulation of Job, when,
 for the trial of his patience, he was made to look
 upon himself in this deplorable condition!

Spectator.

While thus *pathetick* to the prince he spoke,
 From the brave youth the streaming passion broke.

Pope.

Tully considered the dispositions of a sincere and
 less mercurial nation, by dwelling on the *pathetick*
 part. *Swift.*

PATHOGNOMONICK, *adj.* *Gr. παθογ-
 νομονικός, παθος, and γινωσκω, to know. Such*
 signs of a disease as are inseparable, or indicate
 the essence or real nature of it; not symptoma-
 tic.

He has the true *pathognomonick* sign of love, jea-
 lousy; for nobody will suffer his mistress to be
 treated so. *Arbutnot.*

PATHOLOGY. See **MEDICINE**.

PATHROS, a city and canton of Egypt, which
 the prophets Jeremiah and Ezekiel mention;

Jer. xlv. 1, 15. Ezek. xxix. 14, xxx. 14. We
 are uncertain of its situation. Pliry and Pto-
 lemy call it Phaturis; and it appears to have
 been in Upper Egypt. Isaiah (x. 2) calls it
 Pathros; and it is the country of the Pathrusim,
 the posterity of Mizraim, mentioned by Moses,
Gen. x. 14. Ezekiel threatens them with an
 entire ruin. The Jews retired thither, notwith-
 standing the remonstrances of Jeremiah; but
 Isaiah foretold their return.

PATIENT, *adj., n. s. & v. a.* } *Fr. patient;*
PATIENTLY. } *Ital. pazienza;*

Lat. patiens. Enduring; with of before the
 thing endured; calm; meek; the adjective cor-
 responding.

Have *patience* with me, and I will pay thee all.
Matthew.

Warn them that are unruly, support the weak, be
patient toward all men. *1 Thes. v. 14.*

Necessary *patience* in seeking the Lord is better
 than he that leadeth his life without a guide.

Eccles. x. 32.

You deal with me like a physician, that, seeing
 his *patient* in a pestilent fever, should chide instead
 of administering help, and bid him be sick no more.

Sidney.

Through ignorance of the disease, through unrea-
 sonableness of the time, instead of good he worketh
 hurt, and out of one evil throweth the *patient* into
 many miseries. *Spenser.*

By their *patience* be it spoken, the apostles preached
 as well when they wrote, as when they spake the
 gospel. *Hooker.*

That which they grant, we gladly accept at their
 hands, and wish that *patiently* they would examine
 how little cause they have to deny that which as yet
 they grant not. *Id.*

The king-becoming graces,
 Devotion, *patience*, courage, fortitude;
 I have no relish of them. *Shakespeare. Macbeth.*
 Be *patient*, and I will stay. *Id. Henry VI.*
 To proper *patients* he kind agents brings,
 In various leagues binds disagreeing things. *Creech.*

Lament not, Eve, but *patiently* resign
 What justly thou hast lost.

Milton's Paradise Lost.

To this outward structure was joined strength of
 constitution, *patient* of severest toil and hardship.

Fell.

Grieved, but unmoved, and *patients* of your scorn,
 I die. *Dryden's Theocritus.*

Nor will the raging fever's fire abate
 With golden canopies or beds of state;
 But the poor *patient* will as soon be found
 On the hard matress or the mother ground. *Dryden.*

Wheat, which is the best sort of grain, of which
 the purest bread is made, is *patient* of heat and cold.

Ray.

Patience, an herb, makes a good boiled sallad.

Mortimer.

Christian fortitude and *patience* have their oppor-
 tunity in times of affliction and persecution.

Spriet.

Cato, lend me for a while thy *patience*,
 And condescend to hear a young man speak.

Addison.

A physician uses various methods for the recovery
 of sick persons; and, though all of them are dis-
 agreeable, his *patients* are never angry. *Id.*

Malice is a passion so impetuous and precipitate,
 that it often involves the agent and the *patient*.

Government of the Tongue.

Frequent debauch to habitude prevails,
Patience of toil and love of virtue fails. *Prior.*

Too industrious to be great,
 Not *patient* to expect the turns of fate,
 They opened camps deformed by civil fight. *Id.*
 Whatever I have done is due to *patient* thought.

Newton.

It is wonderful to observe how inapprehensive these *patients* are of their disease, and backward to believe their case is dangerous.

Blackmore.

Could men but once be persuaded *patiently* to attend to the dictates of their own minds, religion would gain more proselytes. *Calamy's Sermons.*

Ned is in the 'gout,

Lies racked with pain, and you without,

How *patiently* you hear him groan!

How glad the case is not your own! *Swift.*

Action and passion are modes which belong to substances: when a smith with a hammer strikes a piece of iron, the hammer and the smith are both agents or subjects of action; the one supreme, and the other subordinate: the iron is the *patient* or the subject of passion, in a philosophical sense, because it receives the operation of the agent. *Watts.*

He learnt with *patience*, and with meekness taught;
 His life was but the comment of his thought.

Harte.

But once enslaved, farewell! I could endure
 Chains no where *patiently*: and chains at home,
 Where I am free by birthright, not at all. *Cowper.*

PATIGUMQ (a corruption of the words *pate de guimauve*), a sort of lozenge much used on the continent, as an agreeable and useful remedy for catarrhal defluxions, and supposed by Dr. Percival to consist of gum arabic combined with sugar and the whites of eggs. But it is said that the powdered substance of the marshmallow is the chief ingredient of the composition.

PATIN (Charles), M. D., a celebrated French author who excelled in the knowledge of medals. He was born in Paris in 1633. He studied physic, took his degrees, and practised with great success. In 1676 he was appointed professor of physic in Padua; and in 1679 was created a knight of St. Mark. He died in that city in 1694. His works are numerous. See **NUMISMATOLOGY**.

PATIN, or **PATINA**, ærugo, or the green rust of copper, so much valued by antiquarians, as an evidence of the genuineness of ancient copper coins. Instead of corroding the metal, as the rust of iron does, patina is the best preservative of ancient copper coins. This rust is sometimes counterfeited, and a false patina substituted for that which is true. The false varnish is black, greasy, and shining, and is besides very tender when touched with a burin or needle. The ancient, on the contrary, has none of these qualities, and is as hard as the coin itself. Mr. Pinkerton observes, that sometimes a light green, oally-like varnish is produced, spotted with a kind of iron marks. This is made of sulphur, verdigris, and vinegar; and is to be often distinguished, among other marks, by hair strokes of the brush with which it was laid on. The following hints are given by Vico, whom Pinkerton cites, respecting false patina. He describes it as green, black, russet or brown, gray, and iron color. The green is made with verdigris; the black is smoke of sulphur; the

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gray is formed of chalk steeped in urina, in which the coin is left for some days. The russet most nearly approaches the natural patina, being a kind of froth formed by the fire from ancient coins; but when false it is too shining. The large brass coins of the Ptolemies are often employed in producing it, since they are frequently corroded: these are made red hot, and, the metals being put in them, a fine rust adheres. Vico does not explain the process of iron color. Sometimes, he says, they take an old defaced coin, covered with real ancient patina, and stamp it afresh; but the patina is then too bright in the cavities and too dull in the protuberances. It may be observed, in conclusion, that the trial of brass coins with the tongue is often serviceable; for, if modern, the patina tastes pungent or bitter; while, if ancient, it is perfectly tasteless.

PATIZITHES, one of the Persian Magi, whose brother having a strong resemblance to Smerdis, the second son of Cyrus the Great, he raised him to the throne on the death of Cambyses, pretending that he was prince Smerdis. See **PERSIA**.

PATKUL (John Reinhold, Count), a brave and accomplished nobleman, born in Livonia. He was employed to represent the grievances of that province to Charles XI. of Sweden; which he did with intrepidity and freedom. For this the king caused him to be prosecuted for high treason; when he was condemned to lose his head. Patkul, however, escaped, and entered into the service of Peter the Great; but, while acting as the czar's ambassador to Augustus, king of Poland, whom he had formerly served, he was most ungratefully delivered up a prisoner, by that monarch, to Charles XII.; who caused him to be broken alive on the wheel, with every circumstance of ignominy and aggravated cruelty, on the 30th of September, 1707.

PATMOS, an island of the Grecian archipelago, situated in N. lat. 37° 20', E. long. 26° 35', consists of two portions of an island united by an isthmus. It is encompassed with porphyry rocks, black and porous, full of crystals of feldspar. On a hill at the junction of the two parts of the island the Greeks once built a fort, the remains of which are still visible; they consist of walls flanked with towers, of very solid masonry and of the porphyry found in the country. On a mountain elevated above the rest is the monastery of St. John the Evangelist; it was in a grotto excavated in the rock that the apostle, banished into Patmos, is said to have written the book of the Revelation. From this height an extensive and delightful view all round strikes the eye; few spectacles in nature have equal beauty. The monastery on the summit, which is fortified like a castle, is the residence of a hermit, renowned for his devotions and pretended revelations; and the island is filled with little churches and chapels, which here occupy the place of houses; there are about 240 of these churches, while the houses do not exceed 600. The monastery itself contains about 500 monks, and has a revenue of 200 purses. The caloyers or priests are very ignorant; M. de Choiseul found only three who

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could read tolerably; and neither he nor Sonini thought they had any library; later travellers have found some books and MSS. here. The priests, however, did not appear to make use of them; and Dr. Clarke persuaded them without much difficulty to sell him their most valuable MSS., which are yet to be seen in the university library at Cambridge. One traveller, who visited the monastery of St. John in 1817, found a monk who was acquainted with the ancient Greek, and who had a library with a few MSS. There is a hermitage built on the grotto, where John received his revelations.

The disastrous effects of monachism are imprinted on the very soil of Patmos; there is no agriculture, no industry, no population. The Caloyers are the most considerable inhabitants in the island, there is but one town, or rather village, built on the side of the mountain on which the convent stands. The land is overgrown with weeds and in many places bare and very wild in its appearance; misery indeed weighs heavily on this island; the soil is naturally fruitful and needs only the cultivation of the hand of man; but he has chosen rather to cover it with churches than harvests. The little agriculture that is attended to is the work of the women; the men, during the fine season, go to seek their living elsewhere, especially by transporting the productions of one island of the Archipelago, or of one sea port of the Levant, to another. They go as far as the Black Sea for the corn they want. Notwithstanding the hard labor that they undergo, the women of Patmos excite the attention of foreigners by their beauty; in the time of Tournefort they used to load themselves with heavy burdens, without being sensible that it affected their shape; but they now carry lighter loads and with much more address. At that time they thought every foreigner who accosted them was looking for a woman, because a Marseillaise had married one for her beauty; but foreigners so often abused their easy access, that after some time the women fled at their approach to hide themselves in the deserts, especially when their husbands were absent. With the very fine red and shining cotton thread, cultivated in Scio, and spun in the convents, the women of this island, as well as those of Seripho, make caps, net-work, purses, stockings, &c. A German author supposes this silky cotton is the byssus, so much esteemed in ancient times as one of the most precious articles for luxurious clothing. Great neatness prevails in their dwellings, and they have a peculiar custom of raising their beds to the height of ten feet above the ground.

PATNA, PADMAVATI. A large city of Hindostan, the capital of the province of Bahar, and standing in lat. $25^{\circ} 37' N.$, long. $85^{\circ} 15' E.$ It is situated on the south side of the Ganges, which is here five miles wide during the rainy season. The town is one continued street for many miles along the river; the houses of the natives being generally of mud; but those of the Europeans of brick, and of handsome appearance. There are also several large old buildings of brick. It was formerly fortified after the native manner, with a wall and small citadel. The

surrounding country is perfectly flat. This town is prosperous and populous; but the number of inhabitants has never been correctly ascertained; they cannot, however, be estimated, says Mr. Hamilton, at less than 150,000. Every article of food is remarkably cheap.

Chintzes and dimities are manufactured here, and also cloths resembling diaper and damask linen. In the vicinity flannels well wove, but ill fulled, are made, and also a sort of canvas from cotton. A large quantity of salt-petre is annually despatched to Calcutta.

Patna is a city of great antiquity, and supposed by some to be the site of the ancient Palibothra. By the modern Mahometans it is named Azimabad, and by the Hindoos Sri Nagur. Many years since the East India Company erected a dépôt here to contain rice. It is a building of stone in the shape of a bee-hive, with two winding staircases on the outside, which have been ascended on horseback. The grain is poured in at the top, there being a small door at the bottom to take it out. The walls at the bottom, although twenty-one feet thick, have given way—a circumstance of very little consequence, as were it filled (which it never was) it would not contain one day's consumption for the inhabitants of the province. It originally cost 120,000 rupees. Here are also the remains of the British factory, where the massacre of 200 prisoners was perpetrated in 1763 by a German adventurer, Somro (Summers), in the service of Meer-Cossim; immediately after which the city was captured by the British troops under major Adams, and has ever since remained in our possession. A monument, but without inscription, is erected to the memory of the sufferers. In Bankipoor, one of the suburbs of Patna, the East India Company's civil servants reside. The provincial court of appeal and circuit, its registers and clerks, the district and city court, with the commercial resident, collector, and other agents of the Company, compose a numerous establishment. The Patna division of the court of circuit comprehends the following districts, viz. 1. Ramgur; 2. Bahar; 3. Tirhoot; 4. Sarum; 5. Shahabad; 6. The city of Patna. Travelling distance from Patna to Calcutta, by Moorshedabad, 400 miles; by Birmboom 340; from Benares, by Buxar, 155; from Delhi 661; from Agra 544; and from Lucknow 316 miles.

PATRÆ, a city of Achaia, at the north-west of the Peloponnesus, which assisted the Ætolians when invaded by the Gauls under Brennus. It was afterwards reduced to extreme poverty, till Augustus reunited the scattered citizens, and made it a Roman colony, settling a portion of the troops which obtained the victory of Actium, with other inhabitants from the adjacent places. Patræ refLOURISHED and enjoyed dominion over Naupactus, Ceanthea, and several cities of Achaia. In the time of Pausanias it was adorned with temples and porticoes, a theatre, and an odéum which was superior to any in Greece, but that of Atticus Herodes at Athens. In the lower part of the city was a temple of Bacchus *Æsymmetes*, in which was an image preserved in a chest, and conveyed from Troy by

Eurypylus. By the port were temples; and by the sea, one of Ceres, with a pleasant grove and a prophetic fountain of unerring veracity in determining the event of any illness. After supplicating the goddess with incense, the sick person appeared, dead or living, in a mirror suspended so as to touch the surface of the water. In the citadel of Patræ was a temple of Diana Laphria, with her statue in the habit of a huntress, of ivory and gold, given by Augustus Cæsar, when he laid waste Calydon and the cities of Ætolia to people Nicopolis. The Patrensians honored her with a yearly festival, which is described by Pausanias who was a spectator. They formed a circle round the altar with pieces of green wood, each sixteen cubits long, and within heaped dry fuel. The solemnity began with a most magnificent procession, which was closed by the virgin priestess in a chariot drawn by stags. On the following day, the city and private persons offered at the altar fruits, and birds, and all kinds of victims, wild boars, stags, deer, young wolves, and beasts full grown; after which the fire was kindled. It was not remembered that any wound had ever been received at this ceremony, though the spectacle and sacrifice were as dangerous as savage. The number of women at Patræ was double that of the men. They were employed chiefly in a manufacture of flax which grew in Elis, weaving garments, and attire for the head.

For the state of the modern town of PATRAS, see our article GREECE, Vol. X. p. 630.

PATRIARCH, *n. s.*

PATRIARCHAL, *adj.*

PATRIARCHATE, *n. s.*

PATRIARCHSHIP

PATRIARCHY.

Fr. *patriarche*; Lat.

patriarcha; Greek,

πατριάρχης. The

father and ruler of a

family; one who

governs by a paternal right; applied to ecclesiastical superiors: patriarchal is the corresponding adjective: and patriarchate, patriarchship, and patriarchy, all express the state or quality of a patriarch.

Calabria pertained to the *patriarch* of Constantinople, as appeareth in the novel of Leo Sophus, touching the precedence of metropolitans belonging to that *patriarchy*. *Brerewood.*

The *patriarchs* for an hundred years had been of one house, to the prejudice of the church, and there yet remained one bishop of the same kindred. *Raleigh.*

The good *Patriarch* was the same in Potiphar's dungeon, and on Pharaoh's bench. *Hall.*

Between ecclesiastical, the questions are as ancient as the differences between Rome and any other of the old *patriarchates*. *Selden.*

So spake the *patriarch* of mankind; but Eve Persisted, yet submits. *Milton's Paradise Lost.*

The monarch oak, the *patriarch* of the trees, Shoots rising up, and spreads by slow degrees, Three centuries he grows, and three he stays Supreme in state; and in three more decays. *Dryden.*

Nimrod enjoyed this *patriarchal* power; but he against right enlarged his empire, by seizing violently on the rights of other lords. *Locke.*

Such drowsy sedentary souls have they,

Who would to *patriarchal* years live on,

Fixed to hereditary clay,

And know no climate but their own. *Norris.*

Where secular primates were heretofore given, the ecclesiastical laws have ordered *patriarchs* and ecclesiastical primates to be placed. *Ayliffe's Patergon.*

Archbishops or metropolitans in France are immediately subject to the pope's jurisdiction; and in other places they are immediately subject to the *patriarchal* sees. *Ayliffe.*

Prelacies may be termed the greater benefices; as that of the pontificate, a *patriarchship* and archbishoprick. *Id.*

PATRIARCHS, the name given to those fathers who lived towards the beginning of the world, and who became famous by their long lines of descendants. Abraham, Isaac, and Jacob, and his twelve sons, are the patriarchs of the Old Testament; Adam, Seth, Enoch, &c., were antediluvian patriarchs. The authority of patriarchal government existed in the fathers of families, and their first-born after them, exercising all kinds of ecclesiastical and civil authority in their respective households; and to this government, which lasted till the time of the Israelites dwelling in Egypt, some have ascribed an absolute and despotic power, extending even to the punishment by death.

PATRIARCHS, CHRISTIAN, are ecclesiastical dignitaries, or bishops, so called from their paternal authority in the church. The power of patriarchs was not the same in all, but differed according to the customs of countries, or the pleasure of kings and councils. Thus the patriarch of Constantinople became in course of time patriarch over the patriarchs of Ephesus and Cæsarea, and was called the œcumenical and universal patriarch; and the patriarch of Alexandria had some prerogatives which no other patriarch but himself enjoyed, such as the right of consecrating and approving every single bishop under his jurisdiction. The patriarchate has ever been esteemed the highest dignity in the church: the bishop had only under him the territory of the city of which he was bishop: the metropolitan superintended a province, and had for suffragans the bishop of his province; the primate was the chief of what was then called a diocese, and had several metropolitans under him; and the patriarch had under him several dioceses, composing one exarchate, and the primates themselves were under him. Usher, Pagi, De Marca, and Morinus, attribute the establishment of the grand patriarchates to the apostles themselves; who, say they, chose the three principal cities in the three parts of the known world; viz. Rome in Europe, Antioch in Asia, and Alexandria in Africa: and thus formed a trinity of patriarchs. Others maintain that the name of patriarch was unknown at the time of the council of Nice; and that long afterwards patriarch and primates were confounded together, as being all equally chiefs of dioceses, and superior to metropolitans, who were only chiefs of provinces. Hence Socrates gives the title patriarch to all the chiefs of dioceses, and reckons ten of them. It does not appear that the dignity of patriarch was appropriated to the five grand sees of Rome, Constantinople, Alexandria, Antioch, and Jerusalem, till after the council of Chalcedon in 451; for when the council of Nice regulated the limits and prerogatives of the three patriarchs of Rome, Antioch, and Alexandria, it did not give them the title of patriarchs, though it allowed them the pre-eminence and privileges.

thereof. Nor is the term patriarch found in the decree of the council of Chalcedon, whereby the fifth place is assigned to the bishop of Jerusalem; nor did these five patriarchs govern all the churches. There were besides many independent chiefs of dioceses, who, far from owning the jurisdiction of the grand patriarchs, called themselves patriarchs; such as that of Aquileia; nor was Carthage ever subject to the patriarch of Alexandria. Mosheim imagines that the bishops, who enjoyed a certain degree of pre-eminence over the rest of their order, were distinguished by the Jewish title of patriarchs in the fourth century. The authority of the patriarchs gradually increased, till, about the close of the fifth century, all affairs of moment within their patriarchate came before them. They consecrated bishops; assembled yearly in council the clergy of their respective districts; pronounced a decisive judgment in those cases where accusations were brought against bishops; and appointed vicars or deputies, clothed with their authority, for the preservation of order in the remote provinces. In short, nothing was done without consulting them; and their decrees were executed with the same respect as those of the princes. But the authority of the patriarchs was not acknowledged through all the provinces. Several districts, both in the eastern and western empires, were exempted from their jurisdiction. The Latin church had no patriarchs till the sixth century; and the churches of Gaul, Britain, &c., were never subject to the authority of any patriarch. There was no primacy, no archate nor patriarchate, owned here; but the bishops, with the metropolitans, governed the church in common. Du Cange says that some abbots have borne the title of patriarchs.

PATRIARCHS, JEWISH, a dignity respecting the origin of which there is a variety of opinions. The learned authors of the Universal History think, that the first appearance and institution of those patriarchs happened under Nerva the successor of Domitian. It seems probable that the patriarchs were of the Aaronic or Levitical race; the tribe of Judah being at that time too much depressed, and too obnoxious to the Romans, to be able to assume any external power. But, of whatever tribe they were, their authority came to be very considerable. Their principal business was to instruct the people; and for this purpose they instituted schools in several cities. And by this means having gained great reputation for their learning, zeal, and piety, they ventured at length to levy a kind of tribute from their brethren, to defray the charges of their dignity, and of the apostoli, or legati, under them, whose business it was to carry their orders and decisions through the other provinces of their dispersion, and to see them punctually executed by all, that some shadow of union might be kept up among the western Jews. They likewise nominated the doctors who were to preside over their schools and academies; and these were in process of time styled chiefs and princes, in order to raise the credit of that dignity, or to imply the great regard which their disciples were to pay to them. These chiefs became at length rivals of the patriarchs; and some of them possessed both dignities at once; a usurpation which

caused not only great confusion amongst them but oftentimes violent and bloody contests. However, the Jewish rabbis have contended for a much older era for this patriarchal dignity, and have given us a succession of them down to the fifth century, in which it was abolished. According to them, the first patriarch was Hillel, surnamed the Babylonian, because he was sent for from Babylon to Jerusalem, about 100 years before the ruin of their capital, or thirty before the birth of Christ, to decide a dispute about keeping the Passover, which on that year fell out on the Sabbath day; and it was on account of his wise decision that he was raised to that dignity, which continued in his family till the fifth century. He was likewise looked upon as a second Moses, because he lived like him forty years in obscurity, forty more in great reputation for learning and sanctity, and forty more in possession of this patriarchal dignity. They make him little inferior to that lawgiver in other of his excellencies, as well as in the great authority he gained over the whole Jewish nation. The wonder is, how Herod the Great, who was so jealous of his power, could suffer a stranger to be raised to such a height of it, barely for having decided a dispute of little importance. Hillel was succeeded by his son Simeon, whom many Christians pretend to have been the venerable old person of that name, who received the divine infant in his arms. The Jews give him but a very obscure patriarchate; though the Christian authors make him chief of the sanhedrim; and Epiphanius says, that the priestly tribe hated him so much, for giving so ample a testimony to the divine child, that they denied him common burial. But it is hardly credible that St. Luke should have so carelessly passed over his two-fold dignity, if he had been really possessed of them. He was succeeded by Jochanan, not in right of descent, but of his extraordinary merit, which the rabbis describe in terms of the most extravagant hyperboles. He enjoyed his dignity but two years, or at most five years, and is said to have foretold to Titus that he was ordained to destroy the temple; on which account they pretend that general gave him leave to remove the sanhedrim to Japhne. The Jewish writers add that he erected an academy there, which subsisted till the death of Akiba; was the seat of the patriarch; and consisted of 300 schools; and another at Lydda, near Japhne, and where the famed St. George is buried. He lived 120 years; and, being asked what he had done to prolong his life? he gave this answer: I have taken care to celebrate all festivals: and my mother even sold my head ornaments to buy wine to make me merry on such days; and left me at her death 300 hogsheads of it, to sanctify the sabbath! The doctors that flourished in his time were no less considerable, particularly the famed rabbi Chanina of whom the Bath Col was heard to say, that the world was preserved for the sake of him; and R. Nicodemus, who, they pretend, stopped the course of the sun, like Joshua. He was succeeded by Gamaliel, a man of insufferable pride; and yet of so universal authority over all the Jews, not only in the west but over the whole world, that the very monarchs suffered his laws to be obeyed in their dominions. In his days

flourished Samuel the Less, who composed a prayer full of the bitterest curses against heretics, by which they mean the Christians; and which are still in use. Gamaliel was no less an enemy to them; and yet both have been challenged, the former as the celebrated master of our great apostle, the other as his disciple in his unconverted state. Simon II., his son and successor, died during the siege of Jerusalem. The people so regretted his death that an order was given, instead of ten bumpers of wine, which were usually drank at the funeral of a saint, to drink thirteen at his. These are the patriarchs who, the rabbis tell us, preceded the destruction of the temple; and we need no farther confutation of this pretended dignity than the silence of the sacred historians, who not only make not the least mention of it, but assure us all along that the high-priests presided in the sanhedrim; before whom all cases relating to the Jewish religion were brought and decided. It was the high-priest who condemned our Saviour and St. Stephen; who forbade the apostles to preach in Christ's name; and who sat as judge on St. Paul. The same may be urged from Josephus, who must have known and mentioned this pretended dignity, if any such there had been; and yet is so far from taking the least notice of it, that he places the pontiffs alone at the head of all the Jewish affairs; and names the high-priest Ananus as having the care and direction of the war against the Romans; which is an evident proof that there were then no such patriarchs in being. If there had been any such remarkable succession, the Talmudists would have preserved it; whereas, neither they, nor any of the ancient authors of the Jewish church, make any mention of it; but only some of their doctors, who have written a considerable time after them, to whom little credit can be given, as there are such insurmountable contradictions between them, as no authors either Jewish or Christian have been able to reconcile. Their succession, according to those rabbies, stands as follows: 1. Hillel the Babylonian. 2. Simeon, the son of Hillel. 3. Gamaliel, the son of Simeon. 4. Simeon II., the son of Gamaliel. 5. Gamaliel II., the son of Simeon II. 6. Simeon III., the son of Gamaliel II. 7. Judah, the son of Simeon III. 8. Gamaliel III., the son of Judah. 9. Judah II., the son of Gamaliel III. 10. Hillel II., son of Judah II. 11. Judah III., son of Hillel II. 12. Hillel III., son of Judah III. 13. Gamaliel IV., son of Hillel III. But Gants Tremach David has reduced them to ten. On the whole, it cannot be doubted but that their first rise was in Nerva's time, however much Jewish pride may have prompted them to assert their origin to have been more ancient than it really was. In time, however, they certainly imposed upon the people; and what power they did possess (which the Romans only allowed to be in religious matters, or in such as were connected with religion) they exercised with great rigor. Their pecuniary demands became very exorbitant; and were the cause of their suppression in the year 429.

PATRIARCHAL CROSS, in heraldry, is that where the shaft is twice crossed; the lower arms being lower than the upper ones.

PATRICIAN, *adj.* & *n. s.* *Fr.* *patricien*;

Lat. patricius. Senatorial; noble; not plebeian: a nobleman, or man of high rank.

Noble *patricians*, patrons of my right,
Defend the justice of my cause with arms.

Shakespeare.

You'll find Gracchus, from *patrician* grown
A fencer and the scandal of the town. *Dryden.*

I see

The insulting tyrant prancing o'er the field,
His horse's hoofs wet with *patrician* blood. *Addison.*

Your daughters are all married to wealthy *patricians*. *Swift.*

PATRICIAN was a title given, among the ancient Romans, to the descendants of the 100 or 200 first senators chosen by Romulus; and by him called *patres*, fathers. Romulus established this order after the example of the Athenians; who were divided into two classes, viz. the *εὐγενεῖς*, *patricios*, and *δημογενοὺς*, *populares*. *Patricians*, therefore, were originally the nobility; in opposition to the *plebeians*. They were the only persons whom Romulus allowed to aspire to the magistracy; and they exercised all the functions of the priesthood till A.U.C. 495. But the cognizance and character of these ancient families being almost lost by a long course of years, and frequent changes in the empire, a new kind of *patricians* were afterwards set on foot, who had no pretensions from birth, but whose title depended entirely on the emperor's favor. This new *patriciate*, Zozimus tells us, was erected by Constantine, who conferred the quality on his counsellors, not because they were descended from the ancient fathers of the senate, but because they were the fathers of the republic or of the empire. This dignity in time became the highest of the empire. Justinian calls it *summam dignitatem*.

PATRICIAN was also a title of honor often conferred on men of the first quality in England, in the time of the Anglo-Saxon kings. See **THANE**.

PATRICIAN DEITIES, **PATRICII DEI**, in mythology, were Janus, Saturn, the Genius, Pluto, Bacchus, the sun, the moon, and the earth.

PATRICIANS, in ecclesiastical writers, were ancient sectaries, who disturbed the peace of the church in the beginning of the third century: thus called from their founder *Patricius*, preceptor of a Marcionite called *Symmachus*. His distinguishing tenet was, that the substance of the flesh is not the work of God, but that of the devil; on which account his adherents bore an implacable hatred to their own flesh; which sometimes carried them so far as to kill themselves. They were also called *Tatianites*, and made a branch of the *Encratitæ*.

PATRICK (Peter), a native of Thessalonica, who was sent by the emperor Justinian I. ambassador to Amalasuntha, queen of the Goths, A.D. 534; and in 550 to Chosroes, king of Persia, to conclude a peace. On his return he was appointed mayor of the palace. He wrote a work, entitled *The History of Ambassadors*, part of which is extant, and was published in the *Collection of Byzantine Historians*; in 1648, folio.

PATRICK (Simon), D.D., a learned English bishop, born at Gainsborough in Lincolnshire in 1626. In 1644 he was admitted into Queen's College, Cambridge, and entered into holy orders. After being for some time chaplain to Sir Walter

St. John, and vicar of Battersea, in Surry, he was made rector of St. Paul's, Covent Garden, London. In 1678 he was made dean of Peterborough where he was much beloved. During the reign of king James II. he boldly preached and wrote against the church of Rome. In 1689 he was appointed bishop of Chichester, and was employed with others of the new bishops to settle the affairs of the church in Ireland. In 1691 he was translated to the see of Ely. He died in 1707, after having published various works; among which the most distinguished are *Paraphrases and Commentaries on the Holy Scriptures*, 3 vols. folio. 2. *Tracts against Popery*; 3. *Sermons*; 4. *History of the Church of Peterborough*.

PATRICK (St.), commonly styled the apostle of Ireland, and second bishop of that country. He was born A. D. 373, at Kirk-Patrick, near Dumbarton, now in Scotland, but then comprehended under Britain. His baptismal name, *Suceath*, signifies, in the British language, valiant in war. On some inroad of certain exiles from Ireland, he was taken prisoner, and carried into that kingdom, where he continued six years in the service of Milcho, who had bought him, when Patrick acquired the new name of Cothraig, or Ceathur-Tigh, i. e. four families. In this time he made himself master of the Irish language, and at last made his escape, and returned home on board a ship. About two years after he formed a design of converting the Irish. To qualify himself for this, he travelled to the continent, where he continued thirty-five years, pursuing his studies under his mother's uncle, St. Martin, bishop of Tours, who had ordained him deacon; and after his death with St. Germain, bishop of Auxerre, who ordained him priest, and gave him his third name, Mawn or Maginim. Pope Celestine consecrated him bishop, and gave him his most familiar name, Patricius, expressive of his honorable descent, and to give lustre and weight to the commission which he now charged him with to convert the Irish. Patrick landed in the country of the Evoiein, or at Wicklow, A. D. 441. His first convert was Sinell, the eighth in descent from Cormac king of Leinster. He then proceeded to Dublin, and thence to Ulster, where he founded a church (afterwards the famous abbey of Saul, in the county of Down), remarkable for its position, and being made out of a barn. After laboring seven years indefatigably in his great work, he returned to Britain, which he is said to have delivered from the heresies of Pelagius and Arius; engaged several eminent persons to assist him; visited the Isle of Man, which he converted in 440, when the bishopric was founded; and, A. D. 448, returned to the see of Armagh, which he had founded in 445; and in thirteen years more completed the conversion of the whole island. After giving an account of his commission at Rome, he once more returned to Ireland, and spent the remainder of his life between the monasteries of Armagh and Saul, superintending and enforcing the doctrine and discipline which he had established. After having established schools, he died at Saul abbey, aged 120, March 17, A. D. 493, and was afterwards buried at Down, in the same grave with St. Bridget and St.

Columb. His genuine works were collected and printed by Sir James Ware, 1656. His immediate successor in this see was St. Binen or Begnus.

PATRICK, ST., ORDER OF, an institution which took place in Ireland in 1783. On the 5th of February, 1783, the king ordered letters patent to be passed under the great seal of the kingdom of Ireland, for creating a society or brotherhood, to be called knights of the illustrious order of St. Patrick, of which his majesty, his heirs, and successors, shall perpetually be sovereigns, and his majesty's lieutenant-general and general governor of Ireland, &c., for the time being, shall officiate as grand-masters; and also for appointing prince Edward, and several of the chief nobility of Ireland, knights companions of the said illustrious order.

PATRICK, a county of Virginia, bounded north by Franklin county, east by Henry county, south by North Carolina, and north-west by Grayson and Montgomery county.

PATRIMONIO DI S. PIETRO, the name of a province in the west of Italy, belonging to the Papal states. It lies to the north-west of Rome, and is in length about forty-five miles; in breadth thirty-five. Its chief towns are Civita Vecchia on the coast; Viterbo in the interior; and Bolsena towards its northern limit. It is in general fertile, and was the earliest possession of the bishop of Rome, the grant of it having been originally made by the emperor Constantine.

PATRIMONY, *n. s.* Fr. *patrimoine*; Lat. *patrimonium*. An estate possessed by inheritance.

Inclosures they would not forbid, for that had been to forbid the improvement of the *patrimony* of the kingdom. *Bacon.*

So might the heir, whose father hath, in play,
Wasted a thousand pounds of ancient rent,

By painful earning of one groat a day,
Hope to restore the *patrimony* spent. *Davies.*

In me all
Posterity stands cursed! fair *patrimony*
That I must leave ye, sons.

Milton's Paradise Lost.

For his redemption, all my *patrimony*

I am ready to forego, and quit. *Id. Agonistes.*

The expense of the duke of Ormond's own great *patrimonial* estate, that came over at that time, is of no small consideration in the stock of this kingdom. *Temple.*

Their *patrimonial* sloth the Spaniards keep,
And Philip first taught Philip how to sleep. *Dryden.*

Their ships like wasted *patrimonies* shew;
Where the thin scattering trees admit the light
And shun each other's shadows as they grow. *Id.*

The shepherd last appears,
And with him all his *patrimony* bears;
His house, and household gods the trade of war,
His bow and quiver, and his trusty cur. *Id.*

Good princes have not only made a distinction between what was their own *patrimonially*, as the civil law books term it, and what the state had an interest in. *Dowdant.*

PATRIMONY has been also applied to church estates or revenues; in which sense authors say, the *patrimony* of the church of Rimini, Milan, &c. The church of Rome had *patrimonies* in

France, Africa, Sicily, and many other countries. To create the greater respect to the estates belonging to the church, it was usual to give their patrimonies the names of the saints they held in the highest veneration: thus the estate of the church of Ravenna was called the patrimony of St. Apollinaris; that of Milan the patrimony of St. Ambrose; and the estates of the Roman church were called the patrimony of St. Peter in Abruzzo, the patrimony of St. Peter in Sicily, and the like.

PATRIOT, n. s. } Fr. *patriote*; Gr. πατριω-
PATRIOTISM. } τρις. One who loves his
 country: the love of one's country.

The firm *patriot* there,
 Who made the welfare of mankind his care,
 Shall know he conquered. *Addison's Cato.*
Patriots who for sacred freedom stood.

Tichel.
 Here tears shall flow from a more generous cause,
 Such tears as *patriots* shed for dying laws. *Pope.*
 A man who is a spendthrift, and will not pay a
 just debt, may have his injustice transformed into
 liberality; cowardice may be metamorphosed into
 prudence; intemperance into good nature and good-
 fellowship; corruption into *patriotism*. *Id.*

But living princes have a claim to his attachment
 and respect; upon these terms there is no danger in
 being a *patriot*. *Junius.*

To be suspected, thwarted, and withstood,
 Even when he labors for his country's good;
 To see a band call'd *patriot* for no cause,
 But that they catch at popular applause,
 Careless of all the anxiety he feels,
 Hook disappointment on the public wheels.

Couper.

PATRIPASSIANI, PATRIPASSIANS, a sect
 of Christians, who appeared about the end of
 the second century, so called from their ascrib-
 ing passion or suffering to the Father; for they
 asserted the unity of God in such a manner as
 to destroy all distinction of persons, and to make
 the Father and Son precisely the same. The
 author of this heresy was Praxeas, a philosopher
 of Phrygia. Swedenborg and his followers seem
 to hold a similar faith.

PATRIX (Peter), a French poet, born at
 Caen in 1585. Several of his poems are on re-
 ligious subjects; but one of them, entitled *The*
Dream, has been often translated and imitated.
 He died at Paris in 1673, aged eighty-eight.

PATRIZI (Francis), a learned Italian, born
 in 1530, at Cherso, in Istria; who taught philo-
 sophy at Rome, Ferrara, and Padua, with great
 reputation. He was an opponent of the Peri-
 patetici. He wrote many works; but his *Pa-*
ralleli Militari, or *Parallel of the Ancient Mil-*
itary Art with the Modern, Rome, 1594, folio, is
 esteemed his best piece. He died in 1597,
 aged sixty-seven.

PATROCLUS, a Grecian chief at the Trojan
 war. He was the son of Menætiæus, king of
 Opus, by Sthenele, Philomela, or Polimela.
 Accidentally killing Clysonymus, the son of
 Amphidamas, in his youth, he was compelled to
 fly from Opus. He went to the court of Peleus,
 king of Phthia; was cordially received, and
 contracted the most intimate friendship with
 Achilles, the king's son. When the Greeks went
 to the Trojan war, Patroclus went with them, at

the express desire of his father, and embarked
 with ten ships from Phthia. He was the con-
 stant companion of Achilles; lodged in the
 same tent; and when he refused to appear in
 the field of battle, on account of Agamemnon's
 injustice, Patroclus imitated his example, and
 his absence was the cause of much loss to the
 Greeks. At last Nestor prevailed upon him to
 return to the war, and Achilles permitted him to
 appear in his armour. The bravery of Patro-
 clus, with the terror which the sight of the arms
 of Achilles inspired, soon routed the Trojans,
 and obliged them to fly to the city. He would
 have broken down the walls; but Apollo op-
 posed him; and Hector, at the instigation of
 that god, dismounted from his chariot to attack
 him as he attempted to strip a Trojan whom he
 had slain. This engagement was obstinate;
 but Patroclus was at length overpowered by
 Hector, with the aid of Apollo. His body was
 at last recovered, and carried to the Grecian
 camp, where Achilles received it with the
 loudest lamentations. His funeral rites were ob-
 served with the greatest solemnity. Achilles
 sacrificed near the burning pile twelve young
 Trojans, four of his horses, and two of his dogs;
 and the whole was concluded by the exhibi-
 tion of funeral games, in which the conquerors
 were liberally rewarded by Achilles. Achilles,
 laying aside his resentment against Agamemnon,
 entered the field to avenge the fall of his friend;
 and his anger was gratified only by the slaugh-
 ter of Hector, who had kindled his wrath by
 appearing at the head of the Trojan armies in
 the armour taken from Patroclus. The patro-
 nymic of Actorides is applied to Patroclus, be-
 cause Actor was father to Menætiæus.

PATROL, n. s., & v. n. Fr. *patrouille, pa-*
trouillier; Span. *patrula*. The act of going the
 rounds of a camp or garrison; those who go
 rounds: as a verb, to go the rounds.

These outguards of the mind are sent abroad,
 And still *patrolling* beat the neighbouring road;
 Or to the parts remote obedient fly,
 Keep posts advanced, and on the frontier lie.

Blackmore.

O thou! by whose almighty nod the scale
 Of empire rises, or alternate falls,
 Send forth the saving virtues round the land
 In bright *patrol*.

Thomson's Summer.

The **PATROL**, in war, generally consists of
 five or six men, detached from a body on guard,
 and commanded by a serjeant. They go every
 hour of the night, from the beating of the tattoo
 until the reveille: they walk in the streets in
 garrisons, all over the camp in the field, to pre-
 vent disorders, or any number of people from
 assembling together; they are to see the lights
 in the soldiers' barracks put out, and to take up
 all the soldiers they find out of their quarters.
 Sometimes patrols consist of an officer and thirty
 or forty men, as well infantry as cavalry; but
 then the enemy is generally near at hand, and
 consequently the danger greater.

PATRON, n. s. } Fr. *patron*; Lat.
PATRONAGE, n. s. & v. a. } *patronus*. One who
PATRONAL, adj. } supports or counte-
PATRONES, n. s. fem. } nances; an advocate:
PATRONISE, v. a. } defender; guardian:

hence a guardian saint; and one who has the donation of a church living: patronage is the quality or state of being a patron; protection or support; guardianship; donation of, or right of presentation to, a benefice: to patronage is used by Shakspeare for to patronise: patronal is, guardian; protecting; supporting: patroness, the feminine of patron: patronise, to support; protect; countenance.

Lady, most worthy of all duty, how falls it out that you, in whom all virtue shines, will take the *patronage* of fortune, the only rebellious handmaid against virtue? *Sidney.*

Thou amongst those saints, whom thou do'st see, Shall be a saint, and thine own nation's friend

And *patron*. *Spenser.*

We are no *patrons* of those things; the best defence whereof is speedy redress and amendment. *Hooker.*

An out-law in a castle keeps,

And uses it to *patronage* his theft. *Shakspeare.*

I'll plead for you, as for my *patron*. *Id.*

All things should be guided by her direction, as the sovereign *patroness* and protectress of the enterprise. *Bacon.*

Churchmen are to be had in due respect for their work sake, and protected from scorn; but, if a clergyman be loose and scandalous, he must not be *patronised* nor winked at. *Id.*

Of close escapes the aged *patroness*, Blacker than earst, her sable mantle spread,

When with two trusty maids in great distress, Both from mine uncle and my realm I fled. *Fairfax.*

Where art is encouraged it will soon rise high, and go far; and not suffer a channel of the sea to stay it from the presence of a more bountiful *patronage*. *Bp. Hall.*

Here's *patronage*, and here our heart desires What breaks its bonds, what draws the closer ties, Shows what rewards our services may gain, And how too often we may court in vain. *Creech.*

Befriend me, night, best *patroness* of grief, Over the pole thy thickest mantle throw. *Milton.*

The name of the city being discovered unto their enemies, their penates and *patronal* gods might be called forth by charms. *Browne.*

I have been esteemed and *patronised* by the grandfather, the father, and the son. *Dryden.*

St. Michael is mentioned as the *patron* of the Jews, and is now taken by the Christians as the protector general of our religion. *Id.*

He petitioned his *patroness*, who gave him for answer, that providence had assigned every bird its proportion. *L'Estrange.*

Whether the minds of men have naturally imprinted on them the ideas of extension and number, I leave to those who are the *patrons* of innate principles. *Locke.*

All tenderness of conscience against good laws is hypocrisy, and *patronised* by none but men of design, who look upon it as the fittest engine to get into power. *South.*

From certain passages of the poets, several ships made choice of some god or other for their guardians, as among the Roman Catholics every vessel is recommended to the *patronage* of some particular saint. *Addison.*

Ne'er let me pass in silence Dorset's name;
Ne'er cease to mention the continued debt,
Which the great *patron* only would forget. *Prior.*

It was taken into the protection of my *patronesses* at court. *Swift.*

Far more the *patrons* than the clerks infirm,
Patrons of sense afraid, but not of vice,
Or swoln with pride, or sunk in avarice. *Wesley.*

Patron of all those luckless brains,

That, to the wrong side leaning,

Indite much metre with much pains,

And little or no meaning. *Cowper.*

PATRON, among the ancient Romans, was an appellation given to a master who had freed his slave. As soon as the relation of master expired, that of patron began: for the Romans, in giving their slaves their freedom, did not despoil themselves of all rights and privileges in them; the law still subjected them to considerable services and duties towards their patrons, the neglect of which was very severely punished. Patron was also a name which the ancient Romans gave to some great man, under whose protection they usually put themselves; paying him all kinds of honor and respect, and denominating themselves his clients; while the patron, on his side, granted them his credit and protection. They were therefore mutually attached and mutually obliged to each other; and thus, in consequence of reciprocal ties, all those seditions, jealousies, and animosities, which are sometimes the effect of a difference of rank, were prudently avoided; for it was the duty of the patron to advise his clients in points of law, to manage their suits, to take care of them as of his own children, and secure their peace and happiness. The clients were to assist their patrons with money on several occasions; to ransom them or their children when taken in war; to contribute to the portions of their daughters; and to defray, in part, the charges of their public employments. They were never to accuse each other, or take contrary sides: and, if either of them was convicted of having violated this law, the crime was equal to that of treason, and any one was allowed to kill the offender with impunity. This patronage was a tie as effectual as any consanguinity or alliance, and had a wonderful effect towards maintaining union and concord among the people for the space of 600 years; during which time we find no dissensions nor jealousies between the patrons and their clients, even in the times of the republic, when the populace frequently mutinied against those who were most powerful in the city.

PATRON, in the church of Rome, a saint whose name a person bears, or under whose protection he is put, and whom he takes particular care to invoke; or a saint in whose name a church or order is founded.

PATRON, in the canon or common law, a person who, having the advowson of a parsonage, vicarage, or the like spiritual promotion, belonging to his manor, has on that account the gift and disposition of the benefice, and may present to it whenever it becomes vacant. The patron's right of disposing of a benefice originally arises either from the patron or his ancestors, &c., being the founders or builders of the church; from their having given lands for the maintenance thereof; or from the church's being built on their ground.

PATRONAGE, Lat. *patronatus*, or advowson, is a sort of incorporeal hereditament, consisting in

the right of presentation to a church or ecclesiastical benefice. Advowson, *advocatio*, signifies the taking into protection; and therefore is synonymous with patronage, and he who has the right of advowson is called the patron of the church. For when lords of manors first built churches in their own demesnes, and appointed the tithes of those manors to be paid to the officiating ministers, which before were given to the clergy in common, the lord who thus built a church, and endowed it with a glebe or land, had, of common right, a power annexed of nominating such minister as he pleased (provided he were canonically qualified) to officiate in that church of which he was the founder, endower, maintainer, and patron. Advowsons are either advowsons appendant, or advowsons in gross. They are also either presentative, collative, or donative. See Advowson. As the law now stands, if the true patron once waives his privilege of donation, and presents to the bishop, and his clerk is admitted and instituted, the advowson becomes for ever presentative, and shall never become donative any more. For these exceptions to general rules and common right are ever looked upon by the law in an unfavorable view, and construed as strictly as possible. If therefore the patron, in whom such peculiar right resides, does once give up that right, the law, which loves uniformity, will interpret it to be done with an intention of giving it up for ever; and will therefore reduce it to the standard of other ecclesiastical livings. See Law.

PATRONAGE, ARMS OR, in heraldry, are those on the top of which are some marks of subjection and dependence; thus the city of Paris lately bore the fleur-de-lis in chief to show her subjection to the king; and the cardinals, on the top of their arms, bear those of the pope, who gave them the hat, to show that they are his subjects.

PATRONYMIC, *n. s.* Fr. *patronymique*; Gr. *πατρωνυμικός*. Name expressing that of a father or ancestor: as, Tydides the son of Tydeus.

It ought to be rendered the son, Tectonides being a *patronymich*. *Brooms.*

PATRONYMICS, among grammarians, are derived, 1. From the name of the father; as Pelides, i. e. Achilles the son of Peleus. 2. From the mother; as Philyrides, i. e. Chiron the son of Philyra. 3. From the grandfather on the father's side; as Æacides, i. e. Achilles the grandson of Æacus. 4. From the grandfather by the mother's side; as Atlantiades, i. e. Mercury the grandson of Atlas. And 5. From the kings and founders of nations; as Romulidæ, i. e. the Romans, from their founder king Romulus. The terminations of Greek and Latin patronymics are chiefly four, viz. *des*, of which we have examples above; *as*, Thaumantias, i. e. Iris, the daughter of Thaumias; *is*, as Atlantis, i. e. Electra the daughter of Atlas; and *æ*, as Nerine the daughter of Nereus. Of these terminations, *des* is masculine; and *as*, *is*, and *æ*, feminine: *des* and *æ* are of the first declension, *as* and *is* of the third. The Russians, in their usual mode of address, never prefix any title or appellation of respect to their names:

but persons of all ranks, even those of the first distinction, call each other by their Christian names, to which they add a patronymic. These patronymics are formed in some cases by adding *vitch* to the Christian name of the father; in others by *of* or *ef*; the former is applied only to persons of condition, the latter to those of inferior rank. Thus, Ivan Ivanovitch, Ivan Ivanof, is Ivan the son of Ivan, Peter Alexivich, Peter Alexiof, Peter the son of Alexis. The female patronymic is *Efna*, *Ofna*, or *Owna*, as Sophia Alexeefna or Alexiowna, Sophia the daughter of Alexis; Maria Ivanofna or Ivanowna, Mary the daughter of John.

PATROS, a country mentioned by Jeremiah and Ezekiel, appears from the context to mean a part of Egypt. Bocchart thinks it denotes the Higher Egypt: the Septuagint translate it the country of Pathure, Pliny mentions Nomos Phaturites in the Thebais; and Ptolemy, Pathyris, probably the metropolis.

PATRU (Oliver), a counsellor in parliament, and dean of the French Academy, born at Paris, in 1604. Upon his admission into the French academy, in 1640, he made an oration of thanks, which gave rise to the custom of admissory speeches. He died very poor, on the 16th of January, 1681. The great exactness with which he finished every thing he wrote did not permit him to publish much. His miscellaneous works were printed at Paris in 1670, 4to.; the third edition in 1714, 4to., was augmented with several pieces. They consist of Pleadings, Orations, Letters, Lives of some of his Friends, Remarks upon the French Language, &c.

PATTAN, or PUTTUN, a Mahratta district of Hindostan, province of Gujerat, situated about 24° N. lat. The country is thinly inhabited and poorly cultivated. It contains the remains of an ancient capital, called also Puttun or Nehrwalla.

PATTAN, a town of Hindostan, province of Aurungabad, belonging to the Nizam. Long. 75° 33' E., lat. 19° 29' N.

PATTAN, or PUTN, a town of the province of Nepal, Northern Hindostan. It is situated at the distance of one mile and a half from Catmandoo, on the banks of the Bhagmutty River. It is a neat town, and contains a number of good stone houses. Long. 85° 40' E., lat. 27° 31' N. There are other places of this name in Hindostan.

PATTEALAH, a city of the province of Delhi, Hindostan, now the residence of one of the seik chiefs. It is said to have been founded by Rai Ram Deo, about the year 1465. It is surrounded with a strong mud wall, and has in the centre of it a square citadel, which contains the palace of the rajah. For a long period it was the residence of the collectors of the district, many of whom expended large sums of money in temples, mosques, and gardens, for which it was much celebrated. It also contains the tombs of a number of devout Mahometans, and is still the most flourishing town in the district of Sirhind. Long. 75° 33' E., lat. 30° 18' N.

PATTEN, *n. s.* Fr. *patin*; Ital. *pattino*. A shoe of wood with an iron ring, worn under the common shoe by women, to keep them from the dirt.

Their shoes and *patterns* are snouted and piked more than a finger long, crooking upwards, which they call crackowes, which were fastened to the knees with chains of gold and silver. *Camden.*

Good housewives.

Underneath the umbrella's oily shed,
Safe through the wet on clinking *patterns* tread.

Gay.

PATTER, *v. n.* Dr. Johnson says from *Fr. patte*, the foot; but more probably a frequentative of **PAT**. To make a quick repeated noise like the quick steps of many feet.

Patt'ring hail comes pouring on the main,
When Jupiter descends in hardened rain.

Dryden.

The stealing shower is scarce to *patter* heard
By such as wander through the forest walks.

Thomson.

PATTERN, *n. s. & v. a.* *Fr.* and *Span. patrón*, of *Lat. patrō*. An exemplar or example; archetype; copy designed to be followed; specimen; instance: to pattern is used by Shakspeare, after the *Fr. patronner*, for to make a copy as well as for to serve as a copy or example.

As though your desire were that the churches of old should be *patterns* for us to follow, and even glasses wherein we might see the practice of that which by you is gathered out of scripture. *Hooker.*

They hold that from the very apostles' time till this present age, wherein yourselves imagine ye have found out a right *pattern* of sound discipline, there never was any time safe to be followed. *Id.*

Ay, such a place there is, where we did hunt,
Patterned by that the poet here describes.

Shakspeare.

When I that censure him do so offend,
Let mine own judgment *pattern* out my death,
And nothing come in partial. *Id.*

I will be the *pattern* of all patience;
I will say nothing. *Id. King Lear.*
The example and *pattern* of the church of Rome.

Clarendon.

Lose not the honour you have early won,
But stand the blameless *pattern* of a son.

Dryden.

Measure the excellency of a virtuous mind; not as it is the copy, but the *pattern* of regal power.

Grew.

Patterns to rule by are to be sought for out of good, not loose reigns. *Davenant.*

Christianity commands us to act after a nobler *pattern* than the virtues even of the most perfect men. *Rogers.*

This *pattern* should be our guide, in our present state of pilgrimage. *Atterbury.*

Take *pattern* by our sister star,

Delude at once and bless our sight;

When you are seen, be seen from far,

And chiefly chuse to shine by night. *Swift.*

PATTI, a beautiful town in the north-west of Sicily, situated on an eminence, near a bay of the same name. Its streets terminate in a piazza or square; and the principal building is the cathedral. An earthen-ware manufacture here supplies a great part of the island. The surrounding country displays the greatest beauty and fertility. Inhabitants 5000. Thirty-three miles west of Messina.

PATTRINGTON, a market town and parish, of Yorkshire, seated on a branch of the Humber, ten miles south-east from Hedon, and 191 north of London. The church is well built, and has a

lofty spire, which serves as a landmark for entering the Humber. This town had formerly the advantage of a commodious harbour, and was much more populous, but its haven, a mile distant, will now only admit vessels of very small burden. Market on Saturday.

PATTUR, **PATTUGOTTA**, or the Stone Quay, a town of the district of Boglipoore, Bengal, pleasantly situated at the foot of a range of hills, on the eastern bank of the Ganges, which here is very dangerous for boats, containing many large stones. Near this place, also, there is a rock in the river, on which are carved representations of the Hindoo deities. It is situated seven miles below Colgong. There are several other places of this name in Hindostan.

PATU (Claudius Peter), a French dramatist, born at Paris in 1729. In 1754 he published a comedy, entitled *Adieux du Gout*, which had a great run. He came to England, and translated several English comedies with great taste and accuracy. He went with M. Palissot to Geneva, to see Voltaire, who received him with great kindness. He afterwards went to Naples and Rome, but died of a consumption in 1757, soon after his return to Paris, aged twenty-eight.

PATUKET FALLS, on the Merrimack, between Chelmsford and Dracut, a little above the mouth of Concord River, one mile and a half below the head of Middlesex Canal, ten miles west of Andover. The perpendicular descent is twenty-eight feet. A canal, one mile and a half long, is constructed around the falls, and a bridge is built across the river at the principal descent. Here is a small village in the township of Chelmsford, with a post-office and two cotton manufactories.

PATUXENT, a river of Maryland, which runs south-east into Chesapeake Bay, eighteen miles north of the Potomac. It is navigable for vessels of 250 tons to Nottingham, fifty miles.

PAU, an island of the South Pacific Ocean, one of the Tefee group. It is famous for sandal wood, particularly a part of it called *Vooiha*. Vessels repairing hither can obtain several tons at a time. The natives have curled hair, and are fierce and warlike, and occasionally treacherous. It seems that they are among the principal cannibals now existing in the world. Their dress is very scanty, and their skins coarse and unoiled; and on the whole, both in personal appearance and manners, they are inferior to the Friendly Islanders. Some Englishmen have of late been resident here.

PAU, an ancient and very pretty town, and the principal place of the department of the Lower Pyrenees, or the Bearn, in the south-west part of France. It has a royal court for the departments of the Lower and Upper Pyrenees and the Landes, a lower court of justice, a chamber of commerce, an agricultural society, a university, academy, and a royal college. It is a post town, containing about 11,500 inhabitants. This town is situated at the extremity of a vast plain, overlooking a delightful valley, through which flows the Gave de Pau, and surrounded with country houses, fine gardens, and charming groves, that present a ravishing prospect. It is large, very well built, airy, adorned

with a beautiful public fountain, encompassed with agreeable walks, and crossed by the rivulets of Hedas and the Ousse, which unite at the Gaue de Pau. The chateau, where Henry IV. was born, since made a royal residence, stands at the northern extremity on the peak of a rock, the bottom of which is washed by the river, and forms one of the finest ornaments of the town, overlooking it and the surrounding country. A superb bridge crosses the stream, supported by seven arches, and remarkable for its loftiness. The view from this point is magnificent; the eye wanders with delight over the valley, the river in the bottom, the meadows with which it is covered, and the surrounding hills, beyond which rises, in the form of an amphitheatre, the chain of the Pyrenees, capped by the majestic Pie-du-Midi, whose top is lost in the clouds. This is the native place not only of Henry IV., but of Goston, de Foix, the viscount Orthez, who spared the lives of the Protestants of Bayonne, at the time of the massacre of St. Bartholemew's day, and general Bernadotte, now king of Sweden.

Here are manufactures of handkerchiefs, table linen, and carpets, with paper-mills, tan-yards, and dye-houses. A considerable trade is carried on in Jurancon wines, Bayonne hams, goose legs, excellent chestnuts, spun and dyed cotton, iron, and limestone. There is a royal stud here. Some delightful walks are in the neighbourhood. Pau is sixty miles south of Mont de Marsan; thirty west of Tarbes; seventy-eight E. S. E. of Bayonne, and 615 south-west of Paris, in long. 2° 43' W. from that city, lat. 43° 19' N.

PAVAN, or PAVANE, a grave dance used among the Spaniards, and borrowed from them, wherein the performers formed a kind of wheel or tail before each other, like that of a peacock, pavo, from whence the name is derived. The pavane was formerly in great repute; and was danced by gentlemen with cap and sword; by those of the long robe in their gowns, by princes with their mantles, and by the ladies with their gown-tails trailing on the ground. It was called the grand ball, from the solemnity with which it was performed. To moderate its gravity, it was usual to introduce several flourishes, passades, capers, &c., by way of episodes. Its tablature or score is given at large by Thoinot Arbeau in his *Orchesographia*.

PAUCAROLLA, a province of Peru, bounded by the lake of Titicaca on the north-east, on the east by the lake and the provinces of Chucuito, north by that of Lampa, west by that of Moqueba, and south by the province of Arica and Pacajes. It is eighty-six leagues long, and twenty-eight broad, and is watered by several streams. The climate is cold; in the parts bordering on Lake Titicaca are found Peruvian bark, papas, barley, &c. Cattle, sheep, pigs, and lammas, flourish here; and there are many vicunas, deer, partridges, and lake fowl, which are largely caught by the natives. The lake also supplies fish, and transports the dressed hides, thread, gum, &c., of the district, which are given in exchange for wines, brandies, and other commodities, from the adjacent parts. The natives fabricate also the wool of the Peruvian camel, and carry on a

considerable traffic in that article. Here are also rich mines of gold and silver. Population 26,000.

PAUCAROLLA, formerly the capital of the above province, has fallen off in population, and lost this distinction. It is situate on the shore of the lake Titicaca.

PAUCARTAMBO, a province of Peru, bounded north-west and west by Calca and Lares, north-east and east by the frontier of the Indians, and south by that of Quispicanchi. It is a large ravine or valley, terminating in the Andes; twenty-six leagues from north to south, and from six to seven in breadth. On the heights its temperature is cold; but in the low parts warm. It produces wheat, barley, maize, seeds, and various fruits in abundance. Population 8000, dispersed in eleven settlements.

PAUCITY, *n. s.* Lat. *paucitas*, from *paucus*. Fewness; smallness in number or quantity.

The multitude of parishes, and *paucity* of schools. *Hooker.*

This *paucity* of blood is agreeable to many other animals, as lizards, frogs, and other fishes.

Brown's Vulgar Errors.

In such slender corpuscles as those of colour, may easily be conceived a greater *paucity* of protuberant corpuscles.

Boyle.

Socrates well understood what he said touching the rarity and *paucity* of friends.

L'Estrange.

PAUCTION (Alexis John Peter), a learned mathematician, born near Lussan, in 1732. His principal work was his *Metrologie*, first published in 1760, which contains a collection of the measures of all countries. The astronomer Lalande assisted him in the foreign department. This excellent work contains also calculations of the ancient measures, with dissertations on population, agriculture, &c. He also published *A Theory of the laws of Nature*, in 1781, wherein he attempts to refute the systems of Newton and Nollet. He died in 1799.

PAVE, *v. a.* } Fr. *paver*; Lat. }
PAVEMENT, *n. s.* & *v. a.* } *pavio* (to beat). To }
PAVOR, *n. s.* } lay with hard or }
beaten materials; floor with stone or brick: }
pavement is the material, so laid or consolidated: Bishop Hall makes a fine use of pavement as a verb: a pavior is one who makes or mends pavement.

Should she kneel down,
Her brother's ghost his paved bed would break,
And take her hence in horror. *Shakspeare.*

The marble pavement closes, he is entered
Into his radiant roof. *Id. Cymbeline.*

Let not the court be paved; for that striketh up a great heat in summer, and much cold in winter.

Bacon.

It might open and pave a prepared way to his own title. *Id.*

Whether thou meanest to terminate this miracle in thy body, or in the waves which thou troddest upon; whether so lightening the one that it should make no impression in the liquid waters, or whether so consolidating the other that the paved waves yielded a firm causeway to thy sacred feet to walk on, I neither determine nor enquire. *Bp. Hall.*

A broad and ample road, whose dust is gold,
And pavement stars seen in the galaxy. *Milton.*

From this chymic flame
I see a city of more precious mold,
With silver paved, and all divine with gold.
Dryden.

The streets are paved with brick or freestone.
Addison.

The long laborious pavement here he treads,
That to proud Rome the admiring nations leads.
Id.

For thee the sturdy power thumps the ground,
Whilst every stroke his lab'ring lungs resound.
Gay.

The foundation of Roman ways was made of rough stone joined together with cement; upon this was laid another layer, consisting of small stones and cement, to plane the inequalities of the lower stratum in which the stones of the upper pavement were fixed: for there can be no very durable pavement, but a double one.
Arbutnot.

From these their politics our quidnuncs seek,
And Saturday's the learning of the week:
These labouring wits, like paviors, mend our ways
With heavy, huge, repeated, flat, essays;
Ram their coarse nonsense down, though ne'er so dull,

And hem at every thump upon your scull. *Young.*

PAVEMENT, *lat.* pavementum, from pavo, to beat, the construction of streets, highways, or ground-floors in such a way as that they may be conveniently walked upon, &c.

According to Isidorus the Carthaginians were the first people who paved their towns with stones. 188 years after the expulsion of the kings Appius Claudius Cæcus paved the greater part of the city of Rome, and constructed the Via Appia. At length all the high roads leading from the city were laid with stone, and, by degrees, continued throughout the whole empire; and the remains of them are found, in a greater or less degree of preservation, in the different provinces of which that immense empire was composed. Several of these public roads, besides the Appian, received their names from those of the parties who had dictated their construction. Aurelius Cotta founded, in the year 512, after the foundation of Rome, the Aurelian way; Flaminius the Flaminian way; and the Æmilian way was executed by the command of Æmilius. The censors superintended the forming of these highways, and directed their situations, &c.

With regard to the pavements in the interior of the Roman edifices, they styled such as were constructed upon stages of timber work *contignata pavimenta*; and those made of oaken plank were denominated by them *coassationes*. The opulent Romans appear to have had portable pavements carried about to pave their tents in time of war, as by Julius Cæsar. These were chiefly of mosaic.

In Great Britain the pavement of the principal streets, &c., is generally of flint or rubble-stone, while churches, courts, stables, domestic offices, &c., are paved with tiles, bricks, flags, or fire stone; sometimes with a kind of free stone or rag stone. In some continental churches the pavement is of marble, and sometimes of mosaic, as in the cathedral of St. Mark at Venice, &c.

In France the public roads, in common with the streets, courts, &c., are all paved with gris or grit (a kind of free stone), and the elegance and convenience arising from the use of flag

stones in the streets of English towns are unknown even in Paris, where the pedestrian is in constant danger of being run down by the pole of a carriage.

At Amsterdam and the chief cities of Holland they call their brick pavement the burgher-master's pavement, to distinguish it from the stone or flint pavement, which usually takes up the middle of the street, and which serves for carriages; the brick which borders it being destined for the passage of people on foot. Pavements of free stone, flint, and flags, in streets, &c., are laid dry, i. e. in a bed of sand; those of courts, stables, ground-rooms, &c., are laid in a mortar of lime and sand; or in lime and cement, especially if there be vaults or cellars underneath. Some masons, after laying a floor dry, especially of brick, spread a thin mortar over it; sweeping it backwards and forwards to fill up the joints. The several kinds of pavement are as various as the materials of which they are composed, and whence they derive the name by which they are distinguished.

PAVETA, in botany, a genus of the monogynia order, and tetrandria class of plants; natural order forty-seventh, stellatæ: cor. monopetalous and funnel-shaped above: the stigma carved: the berry dispermous. Species seven, natives of China and of India.

PAVIA, a province or delegation of Austrian Italy, surrounded by those of Milan, Lodi, and Parma; and in the government of Milan. Its surface, for the most part level, is so fertile as to have procured for it the name of the Garden of the Milanese. It contains 320 square miles, and is watered by the Po, the Ficino, and the Olana. The vine and rice are the chief objects of culture. Silk is likewise raised in large quantities; the pastures feed fine cattle, and the cheese of the district forms an important branch of export. The trade of the province is carried on by the Po and the Ticino, and greatly facilitated by the canal, which forms a communication between Milan and Pavia. The climate is mild and salubrious, but has been rendered somewhat unhealthy by the irrigation connected with the extended cultivation of rice.

PAVIA, the ancient Ticinum or Papia, a large town of Austrian Italy, the capital of the delegation of the same name, in the government of Milan. It is situated on an eminence on the banks of the Ticino, four miles above its confluence with the Po. The streets are broad and straight, and most of them contain respectable edifices; but, with the exception of the churches, nothing of splendid or imposing architecture appears. Its length, from east to west, is about a mile. In the Strada Nuova, or principal street, are the mouldering palaces of the Pavian nobility, mingled with shops, churches, colleges, caffès, theatres, and hospitals. 'In the morning this long but not spacious avenue (though the centre of the city, and indeed the city itself, for the lateral streets are few and inferior), is still lifeless,' says lady Morgan, 'and exhibits but little of the bustle of trade, which, we are assured, was ruined under the late changes. In the evening the Strada Nuova is the Corso, not only for the few old carriages with the few old nobles

who occupy them, but the lounge of all the young students of the university, whom we at first took for military à demi-soldes. Nothing, indeed, can be more military than their air and step, set off by spruce large cocked hats; for the university of Pavia has not yet resumed the monkish frock, and the youth have still the air of the élèves of the polytechnic schools of Paris. Mixed with the carriages of the nobles are the pedestrians of all classes and ages, all coming forth 'per pigliar il fresco,' as they call swallowing dust, and perspiring between rows of heated walls, which render the street an oven. Meantime the Austrian officers lounge on benches under the extended awnings of the caffes, smoke their cigars in the faces of the passengers, and talk German.

'The Strada Nuova terminates the length of the city at the gate and bridge of the Ticino. This bridge is one of the most curious objects in Italy, and one of the most striking monuments of the energy and activity of the Italians of the middle age in all works of public utility. It was raised in 1351, when Giovanni di Mandello was Podesta of Pavia. It is 300 feet long by twelve wide; and is covered by a curious roof, supported by 100 columns of granite. When we saw the Ponte del Ticino it was crowded with little oratories and temporary chapels, mostly consecrated to the Virgin, but raised equally for exciting piety and extorting charity; as each shrine was guarded by a very noisy solicitor, in a pilgrim's habit, demanding 'carità' in the name of the Madonna, and of all the saints who had, since the Restoration, taken the structure under their special protection. A curious circumstance was that, while one end of the bridge was guarded by Austrian soldiers, Doganieri, police, &c. &c. &c., the other was protected by the forces of his Sardinian majesty: the Ticino being the actual limit between the legitimate possessions of these respective autocrats. How long it will please Heaven to preserve this partition of its 'divine grace,' seems at present very doubtful.'

From the main street others of greater antiquity branch off at right angles, where all is sad, desolate, and silent; some terminate in piazze or squares, opening before vast and cumbersome palaces, with windows half sashed, doors hanging from their hinges, balconies mouldering over beautiful but fallen porticoes, and the grass shooting up every where between the pavement. In one of these by-streets is shown the site of the imperial palace when Pavia was a royal capital. This was a palace of Theodoric, often cited in the story of various barbarous invasions. It was standing in all its Gothic grandeur in the eleventh century, when a popular insurrection against the tyranny of the emperor Henry II. levelled it to the ground.

'Of the extraordinary edifices which gave to Pavia the name of 'città delle cento torre,' the number now is considerably diminished. Of those that still remain, one is most fearfully attached to the Casa Belcrede, and has an elevation of fifty-six metres; another belongs to the Casa Maino—and both are considered as marks of great distinction and nobility. The original intention of these turrets was internal defence,

before gunpowder or artillery was known. But this primitive design soon degenerated into a spirit of rivalry and ambition; and a tower adjoining to a nobleman's house became a necessary appendage to his grandeur—a distinctive proof of his rank and consequence;—in a word, the landmark of the most puerile vanity. In one of these towers (now no more), in the time of Theodoric, king of the Goths, the celebrated Boethius was shut up, and there he composed his treatise *De Consolatione Philosophiæ*. The tower, as long as it existed, bore his name. On the site where it stood now stands the Casa Malaspina, whose very enlightened lord has placed at the entrance to his palace a marble monument and bust of the illustrious philosopher, with an appropriate inscription, by the abbé Morcelli. It is well known that the Roman consul only left this tower to be executed on the space near the church of St. Peter in ciel d'oro. Another of these towers, now fortunately laid low, was called Torre del Pizzo in. Giu, from its being a reversed pyramid.'

Joseph II. suppressed many of the forty-six convents once seen here; and the government of the kingdom of Italy put down the few that remained. The churches, however, though half shut up and unfit for service, were seldom absolutely destroyed. Near the site of the palace of the Lombard kings stands the ancient Basilicum of St. Michael. History asserts it to be contemporary with the grim king, Grimoaldi, of the sixth century. Contrary to the Lombard manner, it is not built in pietra-cotta, but in marble. Its curious and ponderous façade is covered with bas-reliefs that are of infinite value, for the manners they record. In one compartment the angel Gabriel, a most dolorous figure, with a face as long as if he belonged to the house of Austria, is playing the fiddle. In another there is a representation of the Annunciation; which savours of the Arianism at that time predominant among the Lombards. The angelic messenger is seen presenting a large full grown bambino to the Virgin Mary, who smiles most terribly upon him. Every where monsters, the most strangely deformed, obtrude themselves among Christian seraphim and cherubim. With this barbarous architecture are combined some fine arches of pure Gothic, introduced at a later period into Italy, and called by the Italians, when thus employed, stilo misto. The dark, dank entrance, or portico, of this very ancient building, is painted in fresco, in forms so terrible, as greatly to add to its awful gloom. They are by Andriino D'Edesia, a contemporary of Giotto's; though one might well suppose them coeval with the church's foundation. The interior of this temple is equally gloomy, and almost as barbarous, as the exterior. There is one spot curiously paved with ancient Mosaic, where, it is said, the Lombard kings were crowned, when Pavia, the grave of two dynasties, was the capital and royal city of the kingdom of Italy.

The cathedral of Pavia is a vast and ugly edifice, begun under the episcopal sway of cardinal Visconti, brother to the then reigning duke of Milan, Giovanni Galeazzo Visconti, in the fifteenth century, and lately repaired extensively.

The church of San Pietro in ciel d'oro, or of the Augustinians, though suppressed by the emperor Joseph II., contained the tomb of Boethius, and the body of St. Augustin:—history at least states that king Luitprand had his precious remains conveyed thither from Africa; but Mr. Eustace chills the reverence with which it would naturally be approached, by his fears, that 'instead of the dust of the Christian Plato, the tribute we wish to offer to virtue and wisdom should be erroneously paid to the putrid dust of some Northern invader, or half-savage Lombard.'

San Pietro in ciel d'oro is the scene of one of the pleasant adventures of Boccaccio's *Pavese hero*, Messer Torrello d'Istria di Pavia; and the lovers of Boccaccio in Pavia, according to the lively traveller we have already quoted, numerous there as throughout Italy, point out the spot where they suppose that humorous and most philosophical genius to have placed the sumptuous bed of Torrello, where he was found by the monks, the victim or rather the protégé of necromancy.

The university of Pavia, to which it owes its title of the Insubrian Athens, has the testimony of the imperial diploma of Charles IV. to its importance in the fourteenth century, but is said to have been founded by Charlemagne. To Pavia, through the long course of the middle ages, all the learned of Europe occasionally came; wrestlers in metaphysics, and gladiators in polemics, from all parts of France and Italy in particular; while the Alciati and Baldus drew disciples to their schools, from the most opposite quarters of the world. At one period, in the time of Giasone Maino, Pavia contained 3000 students; but it declined in numbers and reputation, like every thing else in Italy, under the Spanish and Austrian influence; until, towards the end of the eighteenth century, it was so fallen, that even its former reputation was almost forgotten; and this splendid establishment was without a library, a museum, collections, or any means of affording assistance to public education. The wise and excellent count Firmin, minister plenipotentiary in Lombardy, was the first to revive institutions once the glory of northern Italy; and with the assistance of Boscovich, Spallanzani, Tissot, Frank, Volta, Scarpa, &c. &c., he restored to the university much of its ancient consequence.

When Buonaparte became emperor, he visited Pavia (1805) on his way to his coronation at Milan, and particularly noticed the university. The pomp of this journey, and the manner of his reception in the capital of Lombard kings, left far behind the recorded visitations of Charlemagne and Charles V. The rector, at the head of its members, received and harangued him at the gates; terminating his oration with the following words:—'Da Carlo il Grande ebbe questo celebre Archiginnasio li suoi primi principj; da Napoleone il Grande abbia la perfetta sua gloria ed eterna stabilità!' Napoleon is said scarcely to have permitted the eloquent Rettore to conclude his oratorical eulogy, when, rushing by the learned corps, he ran with his natural vivacity, petulance, and curiosity, from class room to class-room, while his splendid military suite

'toiled after him in vain.' Even the attendant professors found his celerity of movement and enquiry too much; and could scarcely find time, or breath, to follow and answer him. 'Che scuola è questa?'—he asked of the first school he entered. It was the class of metaphysics. He sneered and took snuff; then, turning to one of the boys, he asked 'Qual è la differenza fra la somiglia e la morte?' meaning thereby, 'What is the difference between sleep and death?' This naturalization of the French word 'sommeil' was too much for the boy; and he turned for assistance to his learned master, who was as much at a loss as his pupil to comprehend the mystery of these royal metaphysics. 'The case, however, was urgent: for a professor to confess ignorance would never do; but not to understand the emperor was still worse; so down he plunged into a mortal disquisition on death, till Napoleon, perceiving he was not understood, and that the metaphysician was talking nonsense on a nonsensical subject, turned from him petulantly, uttering the word 'Bêtise!' too well pronounced to be misunderstood by any present!—He then hurried to another class-room, with his usual question of 'Che Scuola!' &c. &c. It was the class of his favorite mathematics, and his eyes sparkled at the intelligence! He looked round him for a moment with great satisfaction, then snatching a book from one of the young students' hands, he gave him a problem to work. When the boy had finished the task assigned him by the imperial mathematician, his majesty looked it over, and said, 'Non è così.' 'You are wrong.' The boy boldly persisted that it was 'così,' and that he was right. Napoleon snatched the book and pencil out of his hand; and the master coming in to the emperor's assistance, endeavoured to convince him his pupil was not mistaken; to the infinite (and not concealed) satisfaction of the rest of the class. The emperor then took the slate; and, while marshal Jourdain and others stood yawning behind him, he began to work the problem himself; till, self-convinced of his error he returned the slate, with a 'Sì sì, è bene,' but with the sulky air of a school-boy, who had lost his place at the head of his class. He then proceeded to another school:—It was the school of Volta, the Newton of Electricity. Napoleon ran up to him with open arms, and begged his class might be drawn out. To every proof of their extraordinary progress, the emperor clapped the venerable professor familiarly on the shoulder, exclaiming: 'Bravo, Volta! bravo! vous êtes digne d'élèver la jeunesse!' 'You are worthy to bring up youth.' It was in this class that the emperor perceiving a little boy gazing on him with all the fearless curiosity of childhood, took him by the hand, and asked his name. The animated countenance and ready answers of the boy pleased him; he wrote down his name in his tablets. Shortly after he sent for the lad to Milan; and, until his own fortunes fell, he never lost sight of him. This youth became one of the most distinguished officers in the Italian service.' The University of Pavia was now an object of munificent protection to the new government of the kingdom of Italy; the imperial visit of 'Napoleone il grande,' being not among the least

cause of its aggrandizement.' As a building, the exterior of the university is remarkable for its elegant simplicity: its courts and colonnades are antiquated, and have a cloistral air that suits well with the whole. Its porticoes are spacious; and are encrusted with monuments, raised to the honor of the most illustrious of its deceased members. The cabinet of natural history is described as magnificent. The gallery of animals is near 200 feet long, and the subjects are raised in successive tiers or stages along the walls; an elephant, and some other of the larger races, occupy the centre of the room. The library was founded in the last years of Maria Theresa's reign, under count Firmin: but it owes its principal wealth to Joseph II., and to the additions made to it by the Italian government. To the activity and liberality of this government, the university is also indebted for its fine botanical garden, the hot-houses, and a collection of exotics from New Holland. The corso, the opera, the church, include all the occupation and amusement of Pavia. Its great attraction is its university; and the youth who compose it, like the students of Turin and Bologna, all seem to belong to Europe.

The far-famed Certosa of Pavia, an abbey for Carthusian monks, is four Italian miles from the city, and was built and endowed for the express purpose of expiating the death of his uncle, or, as the Italian chronicle has it, 'ad espiazione delle sue colpe, e redenzione dell'anima'—by Galeazzo Veranti. Galeazzo was one of the most pious sovereigns of the fourteenth century. He made pilgrimages to the shrine of the Virgin at the head of 2000 armed men (his ordinary guard, says the historian); and though such acts of piety were always followed by some terrible crime, yet he was the special favorite of all the bishops of Lombardy; and when he laid the first stone of the Certosa, in 1396, he issued forth from his castle of Pavia, attended by the bishops of Pavia, of Novarro, of Feltré, and of Vicenza, with a body of the principal ecclesiastics of his dominions. The church and monastery rose with incredible speed and splendor; and in three years it was sufficiently advanced to receive the prior and twenty-four monks of the order of the Chartreuse. The immense estates granted by its founder rendered it one of the richest convents in Italy; and a codicil to his will, intimating that the monks should lay by a sum annually for its decoration and improvement, added to its beauty and richness. Successive donations still further increased the wealth of the house; the genius and talent of ages contributed to its ultimate perfection, and the cloisters of the Certosa became the studio of Luino, Giacomo della Porta, Procaccini, Sacchi, Guercino, and others of equal note and ability. Commenced in the fourteenth century, the artists of Italy were still working at it in the eighteenth; yet the labor of 400 years scarcely accounts for the immensity of its details, its sculptures, its carvings, its statuary, its works in gold, bronze, ivory, and ebony, its accumulations of precious stones, of mosaics, of pictures, of frescoes, and all the wonders of wealth and art, which go to the perfecting its chapels, its choirs, and its sacristies, its altars, monuments, and mausoleums. Even the

Lavatoio, the washing-room of the monks, is incrustured with basso-relievo, with busts and gems of the most exquisite workmanship; and its magnificent window of stained glass employed for years the genius of Christoforo Matteis, who finished it in 1477. In the midst of its silent and overpowering magnificence rises the mausoleum of its founder. This superb monument was raised by the monks, a century after his death; to give a hint perhaps, to his successors, the Sforzas, to go and do likewise! It was begun by Pellegrini in 1490, and was finished by Giacomo della Porta in 1562; its arabesque foliage and delicate ornaments were by Christoforo Romano; and the whole is of the most precious Parian marble.

The cloisters of the Certosa, where every thing is simple and solemn, contrast finely with the splendor of the temple. They are found behind a noble fabric, once occupied by the prior, and reserved for the reception of strangers and pilgrims of rank; and are encrusted with tracery and relieves in terra-cotta, serving as a portico to twenty-four isolated houses. These were the cells of the monks; each cell has two rooms, a little garden, with a fountain and marble seat. A wheel, on the outside, turned to receive their food; for there was no communication between the brethren, except in the church. The prior's apartments are spacious and princely; a vast room in the attic was said to have been the temporary prison of Francis I., after the memorable battle of Pavia. One of the first acts of the reforming system of Joseph II. was the suppression of this convent. The prior and monks were pensioned off, and obliged to return to that society which they had vowed to abandon for ever. Four priests were appointed to officiate in the church on Sundays and holidays; a sacristan was named to watch over and keep it in order. Except a few pictures removed by the emperor to Vienna, and a few by the French, the church and convent remain rich and picturesque, as in the days of their greatest prosperity.

The trade of Pavia is insignificant, and consists principally in silk and wine. It is the see of a bishop, and eighteen miles south of Milan and eighty west of Mantua.

PAVILION, *n. s. & v. a.* *Fr. pavillon.* A tent; a temporary or moveable house; to furnish with tents.

For in the time of trouble he shall hide me in his pavilion. *Psa. xxvii. 5.*

He, only he, heaven's blue pavilion spreads
And on the ocean's dancing billows treads.

Sandys.

Flowers being under the trees, the trees were to them a pavilion, and the flowers to the trees a mosaic floor. *Sidney.*

She did lie

In her pavilion, cloth of gold, of tissue.

Shakespeare.

Jacob in Mahanaim saw

The field pavilioned with his guardians bright.

Milton.

It was usual for the enemy, when there was a king in the field, to demand in what part of the camp he resided that they might avoid firing upon the royal pavilion. *Addison.*

The glowing fury springs.
Once more invades the guilty dome, and shrouds
Its bright pavilion in a veil of clouds. *Pope.*

With his battenning flocks the careful swain
Abides pavilioned on the grassy plain. *Anon.*

When troubles rise and storms appear,
There may his children hide;

God has a strong pavilion, where
He makes my soul abide. *Watts.*

PAVILION, in architecture, signifies a kind of turret or building, usually insulated, and contained under a single roof; sometimes square, and sometimes in form of a dome: thus called from the resemblance of its roof to a tent. Pavilions are sometimes also projecting places, in the front of a building, marking the middle thereof; sometimes the pavilion flanks a corner, in which case it is called an angular pavilion. The Louvre is flanked with four pavilions: the pavilions are usually higher than the rest of the building. There are pavilions built in gardens, commonly called summer-houses, pleasure-houses, &c. Some castles or forts consist only of a single pavilion.

PAVILION, in heraldry, denotes a covering in form of a tent, which invests or wraps up the armories of divers independent kings and sovereigns. The pavilion consists of two parts; the top, which is the chapeau, or coronet; and the curtain, which makes the mantle. None but sovereign monarchs, according to the old French heralds, may bear the pavilion entire, and in all its parts. Those who are elective, or have any dependence, say the heralds, must take off the head, and retain nothing but the curtains.

PAUL, previously named **SAUL**, was of the tribe of Benjamin, a native of Tarsus in Cilicia, a Pharisee by profession; first a persecutor of the church, and afterwards a disciple of Jesus Christ, and apostle of the Gentiles. He was a Roman citizen, because Augustus had given the freedom of the city to all the freemen of Tarsus, in consideration of their firm adherence to his interests. His parents sent him early to Jerusalem, where he studied the law at the feet of Gamaliel, a celebrated doctor. He made great progress in his studies, was very zealous for the observation of the whole law of Moses. But he persecuted the church of Christ; and, when the protomartyr St. Stephen was stoned, Saul was not only consenting to his death, but he even took care of the clothes of those that stoned him. This happened A. D. 33, a short time after our Saviour's death. After the death of St. Stephen, Saul showed the utmost violence against the Christians; and having obtained credentials from the high priest Caiaphas, and the elders of the Jews, to the chief Jews of Damascus, with power to bring to Jerusalem all the Christians he should find there, he went to seize all of that profession he could find. But as he was upon the road, and drawing near to Damascus, on a sudden, about noon, he perceived a great light to come from heaven, which encompassed him and all those that were with him. They fell suddenly to the ground, and Saul heard a voice saying to him, 'Saul, Saul, why persecutest thou me?' His answer, with his blindness, the cure, and the other surprising circumstances that followed and ended in his conversion, are recorded in the ninth chapter of the Acts. That Saul, from being a zealous

persecutor of the disciples of Christ, became all at once a disciple himself, is a fact which cannot be controverted without overturning the credit of all history. He must therefore have been converted in the miraculous manner in which he himself said he was, and of course the Christian religion be a divine revelation, or he must have been either an impostor and enthusiast, or a dupe to the fraud of others. There is not another alternative possible. If he was an impostor, who declared what he knew to be false, he must have been induced to act that part by some motive: but the only conceivable motives for religious impostures are, the hope of advancing one's temporal interest, credit, or power; or the prospect of gratifying some passion or appetite under the authority of the new religion. That none of these could be St. Paul's motive, for professing the faith of Christ crucified is plain from the state of Judaism and Christianity at the period of his forsaking the former and embracing the latter faith. Those whom he left were the disposers of wealth, of dignity, of power in Judea: those to whom he went were indigent oppressed men. As to credit or reputation, could the scholar of Gamaliel hope to gain either by becoming a teacher in a college of fishermen? Could he flatter himself that the doctrines which he taught would, either in or out of Judea, do him honor, when he knew that 'they were to the Jews a stumbling block, and to the Greeks foolishness?' Was it then the love of power that induced him to make this great change? Power! over whom? over a flock of sheep whom he himself had assisted to destroy, and whose very Shepherd had lately been murdered! See lord Lyttleton's Observations on the Conversion of St. Paul; a treatise to which it has been truly said, that infidelity has never been able to fabricate a specious answer. The escape of St. Paul from Damascus, where the Jews had influenced the governor to seize him; his meeting at Jerusalem with the disciples, who were still afraid of him; the plot of the Jews to kill him; his journey to Caesarea, and thence to Tarsus, where he continued from A. D. 37 to 43; his journey thence with Barnabas to Antioch, and from that city to Jerusalem, with supplies to the disciples during the famine, A. D. 44, when he met with the prophets Simeon, Lucius, and Manaen, and when he is supposed to have had his ineffable vision of heaven (2 Cor. xii. 2-4); his journey with Barnabas to Cyprus; the opposition of Barjesus; his blindness; the conversion of Sergius Paulus, A. D. 45; the change of Saul's name into Paul; his journey to Perga, and preaching in the synagogues there, as well as at Antioch, Iconium, Lystra, and Derbe; the miracles he wrought, and persecutions he suffered at these places; his recovery after his being stoned, and supposed to be dead; the dissension about circumcision at Antioch; his mission with Barnabas to Jerusalem for the opinion of the other apostles on this subject, with their decision; his censure of St. Peter for his dissimulation: his separation from Barnabas, and junction with Silas; their journey through Lycaonia, Phrygia, Galatia, Mysia, and Troas, to Macedonia; their imprisonment, &c., at Philippi; the conversion of Lydia and the jailor, and their

spirited expostulation with the magistrates; their journey through Amphipolis and Apollonia, ¹⁰ Thessalonica and Berea; the tumults raised by the Jews against them in these cities; Paul's voyage to Athens, A. D. 52; his disputes there with the philosophers; his defence before the Areopagus; the conversion of Dionysius and Damaris; his Journey to Corinth, where he continued eight months, and whence, or from Athens, he wrote his two epistles to the Thessalonians; his accusation before Gallio, and acquittal; his voyage to Ephesus, Cæsarea, and Jerusalem; his journey through Antioch, Galatia, Phrygia, and the higher provinces of Asia; his return to Ephesus, where he continued three years, from A. D. 54 to 57, wrote his epistle to the Galatians, and performed many miracles; and where he says, he also fought with beasts, but whether literally in the amphitheatre, in consequence of a sentence of the heathen magistrates, or whether the expression is only a metaphorical allusion to the trouble he had with Demetrius and the silver-smiths, commentators are not agreed; his journey after this to Philippi in Macedonia, along with Timothy, whence he wrote his two epistles to the Corinthians; thence to Achaia, Corinth, Assos, Mitylene, Miletus, Coos, Rhodes, Patara, Tyre, Ptolemais, and Cæsarea, where he met with Philip the evangelist, and the prophet Agabus, who foretold his future sufferings; his journey thence to Jerusalem, where, by the advice of St. James, he took the vow of a Nazarite; the riot raised in the temple against him by the Jews; his rescue from their fury by Lysias; his unjust treatment by Ananias the high priest; the division between the Pharisees and Sadducees respecting him; the bloody vow of the Jewish assassins to murder him; his transmission to Felix by Lysias; his accusation by Tertullus, and his animated defence; the injustice of Felix; Paul's spirited oration before Festus and Agrippa; its effect upon the latter; Paul's appeal to Cæsar, and consequent voyage from Adramyttium over the seas of Cilicia and Pamphylia, to Myra, and thence to Crete; the storm of fourteen days; the shipwreck on the coast of Malta; the cure of Publius, &c.; Paul's re-embarkation and voyage to Syracuse, Rhegium, and Puteoli, with his final arrival at Rome, and reception there by his countrymen, are all fully recorded by St. Luke, in the Acts of the Apostles, from chap. ix. to xxviii. Paul dwelt for two whole years at Rome, from A. D. 61 to 63, in a hired lodging; where he received all that came to him, preaching the religion of Jesus Christ without intermission. His captivity contributed greatly to the advancement of religion: for he converted several persons even of the emperor's court.—Philip. i. 12-18, and iv. 22. The Christians of Philippi, hearing that St. Paul was a prisoner at Rome, sent Epaphroditus to him, with money, to assist him in their name.—Phil. ii. 25. Epaphroditus fell sick at Rome; and when he went back to Macedonia the apostle sent by him his Epistle to the Philippians. It is not known by what means St. Paul was delivered from prison, but it is certain that he was set at liberty, after having been two years a prisoner at Rome. He wrote

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also, during this imprisonment, his Epistles to Philemon and the Colossians. He travelled over Italy; and, according to some of the fathers, passed into Spain; then into Judea; went to Ephesus, and there left Timothy (Heb. xiii. 24, and 1 Tim. i. 3); preached in Crete, and there fixed Titus, to cultivate the church in that place. Probably he might also visit the Philippians (Phil. i. 23, 26, and ii. 24); and it is believed that it was from Macedonia that he wrote the First Epistle to Timothy. Some time after he wrote to Titus, whom he had left at Crete; desiring him to come to Nicopolis, whence probably he sent this letter. The year following, that is, A. D. 65, he went into Asia, and came to Troas (2 Tim. iv. 13). Thence he went to visit Timothy at Ephesus, and from that to Miletus. (2 Tim. iv. 20.) Lastly, he went to Rome; and St. Chrysostom says that it was reported, that having converted a cup-bearer and a concubine of Nero, this so provoked the emperor that he caused St. Paul to be apprehended and put in prison. It was in this last place of confinement that he wrote his Second Epistle to Timothy, which Chrysostom looks upon as the apostle's last testament. This great apostle is said to have at last consummated his martyrdom, the 29th of June, A. D. 66, by having his head cut off, at a place called the Salvian Waters. He was buried on the Via Ostia.

PAUL, first bishop of Narbonne, or Sergius Paulus the proconsul, converted and made bishop by St. Paul, was descended from one of the best families of Rome. The Spaniards venerate him as their apostle; and say that he died a martyr at Narbonne.

PAUL III. (Pope), whose original name was Alexander Farnese, was born in 1467, and elected pope in 1534. He established the inquisition, approved of the society of the Jesuits, and acted with great violence against Henry VIII. of England. The famous council of Trent was held in his reign. He died in 1549, aged eighty-two.

PAUL IV. (Pope), whose original name was John Peter Caraffa, was born in 1475. He was a learned man, and wrote on the Creed, and other subjects; but was very violent against the reformers. He was elected pope in 1555, when he was eighty, and died in 1559.

PAUL V. (Pope), was born in 1552, in Rome; was first clerk of the chamber, and afterwards nuncio to Clement VIII. in Spain, who made him a cardinal. He was elected pope on the 16th May, 1603, after Leo. XI. The ancient quarrel between the secular and ecclesiastical jurisdictions, which formerly had occasioned much bloodshed, revived in his reign. The senate of Venice had condemned by two decrees, The new foundations of monasteries made without their concurrence; and, The alienation of the estates both ecclesiastical and secular. The first decree passed in 1603, and the second in 1605. About this time a canon and abbot, accused of rapine and murder, were arrested by order of the senate, and delivered over to the secular court; which gave great offence to the court of Rome. Clement VIII. took no notice of the affair; but Paul V., who had managed the Genoese upon a similar occasion, hoped that the Venetians would

be equally pliant. But the senate maintained that they held their power to make laws of God only; and therefore refused to revoke their decrees, and deliver up the ecclesiastical prisoners to the nuncio. Paul, provoked at this behaviour, excommunicated the doge and senate; and threatened to put the whole state under an interdict if satisfaction was not given him within twenty-four hours. The senate protested against this menace, and forbade the publication of it in their dominions. A number of pamphlets were published on both sides. The Capuchins, Theatines, and Jesuits, were the only religious orders who observed the interdict. The senate shipped them all off for Rome, and banished the Jesuits for ever. Meantime Paul was preparing to make the refractory republic submit to his tyranny by force of arms. He levied troops against the Venetians; but at length had recourse to Henry IV. to settle the differences; who soon brought about a reconciliation. His ambassadors at Rome and Venice began the negotiation, and cardinal de Joyeuse finished it in 1607. Paul was strongly solicited to make the immaculate conception of the holy virgin an article of faith, but he only prohibited the contrary doctrine to be publicly taught. He afterwards embellished Rome, and collected the works of the most eminent painters and engravers. He brought water into the city by an aqueduct thirty-five miles long. He completed the frontispiece of St. Peter, and the magnificent palace of Mount Cavallo. He also restored and repaired several ancient monuments. His pontificate was honored with several illustrious embassies. The kings of Japan, and other Indian princes, sent ambassadors to him; and he sent missionaries, and founded bishoprics in their countries. He showed the same attention to the Maronites and other eastern Christians. He also sent legates to different orthodox princes. He died 28th January 1621, aged sixty-nine; after having confirmed the French oratory, the Ursulines, the Order of Charity, and some other institutions. He enjoined all the religious in the prosecution of their studies to have regular professors for Latin, Greek, Hebrew, and Arabic.

PAUL (Father), whose name, before he entered into the monastic life, was Peter Sarpi, was born at Vienna, August 14th, 1552. His father was a merchant, who died leaving his family unprovided for, but the son's abilities rendered him, under the tuition of a maternal uncle, master of languages and science at a very early age. At fourteen he took the habit of the order of the Servites, and at twenty-two was made a priest. After passing successively through the dignities of his order, he was chosen provincial for Venice at twenty-six years of age; and discharged this post with such honor, that in 1579 he was appointed, with two others, to draw up new regulations and statutes. This he executed with great success; and, when his office of provincial was expired, he retired to the study of experimental philosophy and anatomy, in which he is said to have made some useful discoveries. In the dispute between the pope and the senate of Venice, his controversial writings irritated the papal court so highly, that they hired assassins to mur-

der him, but he escaped with severe wounds. This, and other attempts upon his life, obliged him to confine himself to his convent, where he engaged in writing the History of the Council of Trent, on which, and other works of less consequence, he spent the remaining part of his life. He died on the 14th of January, 1623. He was buried with great pomp at the public expense; and a magnificent monument was erected to his memory.

PAUL, in naval affairs, is a short bar of wood or iron, fixed close to the capstern or windlass of a ship, to prevent those engines from rolling back or giving way, when they are employed to heave in the cable, or otherwise charged with any great effort.

PAUL'S (St.), a town and district of Brasil, about twelve leagues from the sea, and 190 miles west of Rio Janeiro. The town stands on an eminence of about two miles in extent, surrounded on three sides by meadow land, and washed at the base by rivulets, which in rainy weather insulate it, except on the narrow ridge by which it is connected with the high land. The rivulets flow into a large stream called the Tieti, which runs within a mile of the town, and are crossed south-west by several bridges of stone and wood. The streets are in general remarkably clean, and the material with which they are paved is said literally to contain particles of gold, that are found in the chinks and hollows after heavy rains. Here are several squares, two convents, three monasteries, and eight churches, the greater part of which, as well as of the whole town, is built of clay beaten into a frame-work of wood. The principal houses are two or three stories high, and stuccoed in various colors. Mr. Mawe mentions that he saw some of these clay houses that had lasted 200 years. He speaks highly of this capital and its inhabitants.

A little coarse cotton is spun by the hand, and woven into cloth for wearing apparel, sheets, &c.; but here are few manufactures of consequence. They also make a beautiful network for hammocks, which are fringed with lace, and form, being slung low, an elegant piece of furniture: the making of lace is a general employment for females. Here are many apothecaries and small dealers who make large sums of money; silver-smiths, whose articles are equally indifferent both in metal and workmanship; tailors and shoemakers in great numbers; and joiners, who manufacture very beautiful wood at high prices. In the outskirts live a number of Creoles, who manufacture earthenware for culinary purposes, large jars, &c. The greatest proportion of the inhabitants, however, consist of agriculturalists, who cultivate small portions of land, on which they breed large stocks of pigs and poultry. The markets are also well supplied with fruit, and a profusion of esculent plants. The gardens in the vicinity are laid out with great taste and elegance. The jasmine is every where a favorite tree, and in this fine climate bears flowers perennially: carnations, pinks, passion-flowers, cocks-combs, &c., are also in great plenty.

The town is said to have been founded in the year 1570, by some malefactors who were transported from Portugal. This, however, is not the

case. It was founded by a colony of Jesuits, and chosen more from the gold which abounded in the neighbourhood, than from the salubrity of the air and climate. The country around, however, has for more than a century been exhausted of this metal. The inhabitants, according to Mr. Mawe, amount to 20,000; the clergy, including all religious orders, to 500. They are in general free from bigotry; so that no stranger would be molested here on account of his religious opinions: the climate is also mild and temperate, the thermometer ranging from 50° to 80°. In the morning it may be observed at 48°; and it is lower in the winter months. Mr. Mawe was obliged to exhibit his license twice in the course of his journey to this place; the city being seldom visited by foreigners, and the passes being guarded with soldiers, who have authority to stop and search all passengers, in order to prevent them from carrying off gold or diamonds. His appearance excited considerable curiosity among all classes: but he was well received and hospitably entertained. 190 miles west of Rio Janeiro.

The province of St. Paul stretches along the coast about 400 miles, and is about 500 in depth. It is connected, as well as the above city, with the history of the singular republic of this name; and is bounded to the west by the great river Parana, which separates it from the Spanish province of Paraguay; on the south by the Iguazu, and a line drawn from this river to the small river St. Francisco, and down to its mouth. It is one of the most fertile and delightful provinces of South America. The great range of mountains which here runs along the coast on the western side, is a vast inclined plain, down which some of the largest branches of the Parana flow into that immense river. The western slope is so gentle as scarcely to be perceptible, and, although not level, it can hardly be considered hilly or mountainous. On the eastern side the ascent is very steep; the road from Santos to St. Paul ascends a mountain 6000 feet high, and is perhaps the most considerable work of this description in Brasil. From this point, however, in following the mountains to the southward, they gradually retire from the coast, leaving a broken country between them and the sea, through which the Paraíba of the south takes its course. Between these mountains and the coast an extraordinary number of cataracts and cascades are formed, by the waters which are precipitated down the eastern side. The navigation of the rivers on the western side is also impeded by a great number of falls and rapids; but the intervals between the portages are navigated by large perogues, such as are used on our western waters, made out of the single trunks of trees, of which there is an abundance on their banks, of a prodigious size. The river Tiete, which rises near the city of St. Paul, is generally used as the channel of communication to the mines of Matto Grosso. After descending to the Parana, they continue down its stream to the mouth of the Pardo, which enters from the west, and up this river to the foot of a chain of mountains, which they cross to the river Taquari, which flows into the river Paraguay, above the Spanish

possessions. The inhabitants of St. Paul took advantage of this route at an early period, for the purpose of committing depredations on the numerous Indian tribes settled on that river.

The climate is probably the most pleasant in Brasil. Though nearer the equator than the provinces of La Plata, the disadvantage is more than counterbalanced by its height; the commencement of the slope is 6000 feet above the sea, and 2000 feet above the inferior limit for the cultivation of European grain. The thermometer descends as low as 40°, though it rarely rises above 80°. In the evenings it is sometimes so cold as to render necessary a change of clothes, and to make use of brazeros (a kind of pan filled with embers, used by Spaniards and Portuguese, instead of fire-places and chimneys). In the vicinity of the capital the tropical fruits are not in as great perfection as they are on the sea coast, but, in lieu of these, all the European fruits, apples, grapes, peaches, are uncommonly fine. This delightful country may be considered as still in a state of wilderness, and inhabited by a number of savage tribes towards the Parana, who are continually at war with the Portuguese, and retain the same ferocity as when the country was first settled. They must finally disappear before the march of civilisation. The principal port of Santo is said to be safe and commodious; but being merely the entrepot to St. Paul, as Laguira is to Caraccas, the town is inconsiderable.

The history of the inhabitants of St. Paul occupies one of the most conspicuous pages in American annals; their character has been variously represented, and generally little to their advantage. Charlevoix, and all the Jesuits, represent them in the most unfavorable light, and they have been spoken of by most writers as barbarians, possessing enough of civilisation to render them formidable, as well as mischievous. They have been also represented as forming a kind of military republic, like that of early Rome, composed of outcasts and adventurers from all countries, under a nominal subjection to the Portuguese, in virtue of which they paid a small tribute of gold and diamonds. A Portuguese writer has undertaken to vindicate their character from these imputations. Mr. Mawe places them above all the people he saw in Brasil, for their highly polished manners, and manly frankness of character, traits by which they are every where distinguished; but he does not reflect, that a century, or even half a century, might produce a very material change in their character. The accounts given of these people, as well as of their enemies the Jesuits, by Dr. Southey, is certainly the most fair and satisfactory. We abstract the substance of it.

The celebrated republic of St. Paul, as it is usually denominated, had its rise about the year 1531, from a very inconsiderable beginning. A mariner of the name of Ramalho, having been shipwrecked on this part of the coast, was received among a small Indian tribe called the Piratiniga, after the name of their chief. Here he was found by De Sousa, some years afterwards, and, contrary to the established policy, of permitting no settlement excepting immedi-

ably on the sea coast, he allowed this man to remain, on account of his having intermarried and having a family. The advantages of this establishment were such that permission was soon after given to others to settle here, and, as the adventurers intermarried with the natives, their numbers increased rapidly. Romalho also allied himself with one of the chief of the Goaynazes by marrying his daughter; for it seems he had conformed to the Indian custom of polygamy. A mixed race was formed, possessing a compound of civilised and uncivilised manners and customs. The Jesuits soon after established themselves with a number of Indians they had reclaimed, and exerted a salutary influence, in softening and humanising the growing colony. In 1581 the seat of government was removed from St. Vincent on the coast to St. Paul's; but its subjection to Portugal was little more than nominal; cut off from all communication, and almost inaccessible, but little notice was taken of it. The mixture produced an improved race; 'the European spirit of enterprise,' says Southey, 'developed itself in constitutions adapted to the country.' But it is much more likely that the free and popular government which they enjoyed produced the same fruits here as in every other country; a restless spirit of enterprise and emulation among each other; the mother of great qualities, but, without a well ordered government, the good was not likely to outweigh the bad. They soon quarrelled with the Jesuits, on account of the Indians whom they had reduced to slavery. The Jesuits declaimed against the practice; but as there were now many wealthy families among the Paulistas, the greater part of whose fortunes consisted in their Indians, it was not heard with patience. The Paulistas first engaged in war against the enemies of their allies, and afterwards on their own account, on finding it advantageous. They established a regular trade with the other provinces whom they supplied with Indian slaves. They by this time acquired the name of Mamelukes, from the peculiar military discipline they adopted, bearing some resemblance to the Mamelukes of Egypt. The revolution in Portugal, when Philip II. of Spain placed himself on its throne, cast the Paulistas in a state of independence, as they were the only settlement of Brasil, which did not acknowledge the new dynasty. From the year 1580, until the middle of the following century, they may be regarded as a republic, and it was during this period they displayed that active and enterprising character for which they were so much celebrated. They discovered and worked the gold mines of Jaragua near St. Paul's; they established colonies in the interior at the numerous mines which they discovered; and their exploring parties were sometimes absent for years, engaged in wandering over this vast country. While a Spanish king occupied the throne of Portugal, they attacked the Spanish settlements on the Paraguay, alleging that the Spaniards were encroaching on their territory, and destroyed the Spanish towns of Villa Rica, Ciudad Real, and Villa de Xerez, besides a number of small settlements. They attacked the Jesuit missions, which by the most extraordinary perseverance, after repeated trials during 100

years, had been at last established. As they had fixed themselves east of the Parana, the Paulistas laid hold of this as a pretext. They carried away upwards of 2000 of their Indians into captivity, the greater part of whom were sold and distributed as slaves. The Jesuits complained to the king of Spain and to the pope; the latter fulminated his excommunication. The Paulistas attacked the Jesuits in their college, and put their principal to death, expelled the remainder, and set up a religion of their own; at least no longer acknowledged the supremacy of the pope. In consequence of the interruption of the African trade during the Dutch war, the demand for Indian slaves was very much increased. The Paulistas redoubled their exertions, and traversed every part of the Brasils in armed troops, to the great terror of the Indians; who were on some of the principal rivers numerous, and established in villages. The foundation was laid of enmity to the Portuguese, which continues to this day, although a complete stop was put to the infamous practice in the year 1756.

This little republic, like all others, was continually distracted by internal factions. Two families, the Piratiningo and the Thaubatenos, were continually struggling for a monopoly of power, and at one time actually engaged in a civil war; but a reconciliation was brought about by the interposition of some ecclesiastics, who proposed that the governor should be alternately elected from the members of the rival families. This continued for nearly a century. When the house of Braganza, in 1640, ascended the throne, the Paulistas, instead of acknowledging him, conceived the idea of electing a king for themselves. They actually elected a distinguished citizen of the name of Bueno, who persisted in refusing to accept, upon which, they were induced to acknowledge Joam IV. It was not until long afterwards, that they came under the Portuguese government.

PAUL'S BAY OF ST., on the northern shore of the St. Lawrence, runs about three miles inland, and is thirty-five miles below the island of Orleans. From the capes Corbeau and LaBaire, which form the exterior points of the bay, the ridges of high lands describe a circuit before they close upon the river. Their lofty and craggy summits form a grand back ground, in the form of an amphitheatre, where is situated the St. Paul's Bay settlement.

PAUL'S ISLAND (St.), an island in the strait between Newfoundland and Cape Breton. It is about fifteen miles north-east of North Cape, in Cape Breton. Long. 60° 2' W., lat. 47° 13' N.

PAULA, a learned Roman lady, who flourished in the fourth century. She was descended from the Scipios and the Gracchi, and added to the brightest qualities of the mind the virtues of Christianity. She was well versed in the Hebrew Scriptures, and was the intimate friend of St. Jerome. She died A. D. 407.

PAULEE, a town of the province of Ajmeer, one of the greatest commercial marts in Hindostan. Here the merchants exchange the commodities of Europe, Persia, and the Dekkan, for those of the Cashmere and the eastern and northern parts of Hindostan.

PAULEE, PAULITZER, or Surgusgur, a fortress

and town of Hindostan, in the province of Aurungabad, situated on the south-east side of the Nagootan River, about twenty miles inland from Bombay. It is said to have been built in the seventeenth century by the celebrated Mahratta chief Sevagee; but is probably even of older date. It is erected on the top of a mountain, about 1500 feet high, and inaccessible except on the north side. There are several reservoirs of water in it; and store-rooms and other places dug out of the solid rock. In 1681 Akbar, fourth son of Aurungzebe, having absconded from his father, took refuge at this place, and was well received by the Mahratta chief Sambajee. This strong fortress was taken by the British troops in February 1818, after a three days' siege.

PAULIANISTÆ, PAULIANISTS, a sect of heretics, so called from their founder, Paulus Samosatenus, a native of Samosata, elected patriarch of Antioch in 262. His doctrine amounted to this: that the Son and the Holy Ghost exist in God in the same manner as reason and activity do in man; that Christ was born a mere man; but that the reason or wisdom of the Father descended into him, and by him wrought miracles upon earth, and instructed the nations; and, finally, that, on account of this union of the divine word with the man Jesus, Christ might, though improperly, be called God. He did not baptise in the name of the Father and the Son, &c.; for which reason the council of Nice ordered those baptised by him to be re-baptised. Being condemned by Dionysius Alexandrinus in a council, he abjured his errors to avoid deposition; but soon after resumed them, and was deposed by another council in 269. His errors are severely condemned by the council of Nice, whose creed differs but little from that now used, under the same name, in the church of England.

PAULICIANS, a branch of the ancient Manichees, so called from their founder, one Paulus, an Armenian, of the seventh century; who, with his brother John, both of Samosata, formed this sect: though others are of opinion that they were thus called from another Paulus, an Armenian by birth, who lived in the reign of Justinian II. In the seventh century a zealot called Constantine revived this drooping sect, which was ready to expire under the severity of the imperial edicts. The Paulicians, however, by their numbers, and the countenance of the emperor Nicephorus, became formidable to all the east. But the cruel rage of persecution, which had for some years been suspended, broke forth with redoubled violence in the reigns of Michael Curopalates and Leo the Armenian, who inflicted capital punishment on such of the Paulicians as refused to return into the bosom of the church. Under the empress Theodora, tutress of the emperor Michael, in 845, several of them were put to death, and more retired among the Saracens. Upon this they entered into a league with the Saracens; and choosing for their chief an officer of the greatest resolution and valor, whose name was Carbeas, they declared a war against the Greeks, which was carried on for fifty years with the greatest vehemence and fury. During these commotions some Paulicians, towards the

conclusion of this century, spread abroad their doctrines among the Bulgarians: many of them, either from zeal, or to avoid persecution, retired, about the close of the eleventh century, from Bulgaria and Thrace, and formed settlements in other countries. Their first migration was into Italy; whence they sent colonies into most of the other provinces of Europe, and formed gradually a considerable number of religious assemblies, who adhered to their doctrine, and who were afterwards persecuted with the utmost vehemence by the Roman pontiffs. In Italy they were called Patarini, from Pataria, in Milan, where they held their assemblies; and Gothari or Gazari, from Gazaria, or the Lesser Tartary. In France they were called Albigenses, though their faith differed widely from that of the Albigenses whom Protestant writers generally vindicate. See **ALBIGENSES**. The first religious assembly the Paulicians formed in Europe was at Orleans in 1017, in the reign of Robert, when many of them were burnt alive. The ancient Paulicians, according to Photius, expressed the utmost abhorrence of Manes and his doctrine. Greek writers comprise their errors under the six following particulars:—1. They denied that this inferior and visible world is the production of the Supreme Being; and they distinguish the Creator of the world and of human bodies from the most high God who dwells in the heavens; and hence some think that they were a branch of the Gnostics rather than of the Manichæans. 2. They refused to worship the Virgin Mary. 3. They refused to celebrate the institution of the Lord's supper. 4. They refused to follow the practice of the Greeks, who paid to the pretended wood of the cross a sort of religious homage. 5. They rejected the books of the Old Testament; and looked upon the writers of that sacred history as inspired by the creator of this world, and not by the supreme God. 6. They excluded presbyters and elders from all part in the administration of the church.

PAULINA, a Roman lady, wife of Saturninus, governor of Syria, in the reign of the emperor Tiberius. Her conjugal peace was disturbed, and violence was offered to her person, by a young man named Mundus, who fell in love with her, and had caused her to come to the temple of Isis by means of the priests of that goddess, who declared that Anubis wished to communicate to her something of moment. Saturninus complained to the emperor of the violence which had been offered to his wife; and the temple of Isis was overturned, and Mundus banished.

PAULINIA, in botany, a genus of the trigynia order, and octandria class of plants; natural order twenty-third, trihilatæ. Its characters are these: the flower has a permanent empalement, composed of four small oval leaves; it has four oblong oval petals, twice the size of the empalement, and eight short stamina with a turbinate germen, having three short slender styles crowned by spreading stigmas; the germen turns to a large three-cornered capsule with three cells, each containing one almost oval seed. Linné reckons seven, and Miller nine species, natives of the West Indies.

PAULINUS, bishop of Nola, was born at Bourdeaux, about A. D. 353. He was consul of Rome, and married Therasia, who converted him to Christianity. He was made bishop of Nola, where he continued till it was taken and sacked by the Goths, in 410. He wrote Letters and Poems with elegance, and died in 431.

PAULINUS, an English bishop, who flourished in the early part of the seventh century. He was the first archbishop of York, about A. D. 626. He built a church at Almonbury, and dedicated it to St. Alban, where he converted the Brigantes. Camden mentions a cross at Dewsborough, which had been erected by him, with this inscription, *Paulinus hic prædicavit et celebravit*. York was so small about this time that there was not so much as a small church in it, in which king Edwin could be baptised. Constantius made it a bishopric. Pope Honorius made it a metropolitan see. At Walsstone, in Northumberland, he baptised Segbert, king of the East Saxons. Bede says 'Paulinus, coming with the king and queen to the royal manor called Ad-Gebrin, staid there thirty-six days with them, employed in the duties of catechising, instructing, and baptising the people in the neighbouring river Glen.' He adds, that 'he preached the word in the province of Lindissi, and converted the governor of the city of Lindocollina, whose name was Blecca, with all his family. In this city he built a stone church of exquisite workmanship, whose roof being ruined, only the walls are now standing.' He also founded a collegiate church of prebends near Southwell, in Nottinghamshire, dedicated to the Virgin Mary, when he baptised the Coritani in the Trent.

PAULO (Mark), a celebrated traveller, son of Nicolas Paulo, a Venetian, who went with his brother Matthew, about 1255, to Constantinople, in the reign of Baldwin II. In the course of their mercantile travels, having been favorably received at the court of Kublai, grand khan of the Tartars, they returned thither with two missionaries from Rome, and young Mark. This young man, having learned the different dialects of Tartary, was employed in embassies which gave him the opportunity of traversing Tartary, China, and other eastern countries. At length, after a residence of seventeen years at the court of the grand khan, the three Venetians returned to their own country, in 1295, with immense fortunes. A short time after his return, Mark serving his country at sea against the Genoese, his galley, in a great naval engagement, was sunk, and himself taken prisoner and carried into Genoa. He remained there many years in confinement; and composed the history of his own and his father's voyages, under this title, *Delle Maraviglie del mondo da lui vidute, &c.*; printed first at Venice in 8vo., 1496.

PAULOVASELO, a town of the Russian government of Niznei-Novgorod, on the Oka, with 6000 inhabitants. Most of them are locksmiths or hardware manufacturers. The town and district are the property of a rich nobleman.

PAVLOVSK, a well built town of the south of Russia, in the government of Voronez, on the Don, with 2000 inhabitants. Seventy-six miles S. S. E. of Veronez.

PAULUS SAMOSATENUS, the founder of the

sect of Paulianists. Zenobia, queen of Palmyra, had a great esteem for him, on account of his eloquence; and he is said to have framed his heresy chiefly with a view to make a convert of her; but she adhered to her prejudices in favor of Judaism.

PAUNCH, *n. s. & v. a.* French *panse*; Ital. *pancio*; Span. *pança*; Lat. *panter*. The stomach; the region of the guts; particularly of a beast; to take out the paunch.

Batter his skull, or *paunch* him with a stake.

Shakspeare.

Demades, the orator, was talkative, and would eat hard: Antipater would say of him, that he was like a sacrifice, that nothing was left of it but the tongue and the *paunch*.

Bacon.

Pleading Matho borne abroad for air,
With his fat *paunch* fills his new fashioned chair.

Dryden.

Chiron attacked Talthibius with such might,
One pass had *paunched* the huge hydropick knight.

Garth.

PAVO, in astronomy, the peacock, a constellation in the southern hemisphere, unknown to the ancients, and not visible in our latitude. See **ASTRONOMY**.

PAVO, in ichthyology. See **PEACOCK FISH**.

PAVO, the peacock, in ornithology, a genus belonging to the order of galline. The head is covered with feathers which bend backwards; the feathers of the tail are very long and beautifully variegated with eyes of different colors. Latham enumerates eight species.

1. *P. albus*, the white peacock, is, as its name imports, entirely white, not excepting even the eyes of the train, which are nevertheless easily traced out. This variety is, in Latham's opinion, more common in England than elsewhere. He met with two instances of the females of this species having the external marks of the plumage of the male.

2. *P. bicalcaratus* is larger than the common pheasant. The bill is black, but from the nostrils to the tip of the upper mandible red. The irides are yellow. The feathers on the crown of the head are sufficiently long to form a crest, of a brown dull color. The space between the bill and eyes is naked, with a few scattered hairs: the sides of the head are white; the neck is bright brown, striated across with dusky brown: the upper parts of the back, scapulars, and wing coverts, are dull brown, dotted with paler brown and yellowish; besides which each feather is marked near the end with a roundish large spot of a gilded purple color, changing into blue and green in different lights; the lower part of the back and rump are dotted with white: all the under parts are brown, striated transversely with black: the quills are dusky, the secondaries are marked with the same spot as the rest of the wing: the upper tail coverts are longer than the tail, and each marked at the end with a spot like the wing feathers, each of which is surrounded, first with a circle of black, and ultimately with an orange one: the legs and claws are brown, and on the back part of each leg are two spurs, one above the other. The female is a third smaller than the male. The head, neck, and under parts are brown; the head smooth; the upper parts are also brown, and the feathers mark-

ed with a dull blue spot, surrounded with dirty orange: the feathers which cover the tail are similar; but marked at the end with an obscure dull oval spot of blue: the legs have no spurs. This species is of Chinese origin, and some of them have been brought from China to England alive.

3. *P. cristatus*, the common peacock of English authors, has a compressed crest and solitary spurs.—It is about the size of a turkey; the length from the top of the bill to the end of the tail being three feet eight inches. The bill is nearly two inches long, and is of a brown color. The irides are yellow. On the crown there is a sort of crest, composed of twenty-four feathers, which are not webbed, except at the ends, which are gilded green. The shafts are of a whitish color; and the head, neck, and breast, are of a green gold color. Over the eye there is a streak of white, and beneath there is the same. The back and rump are of a green gold color, glossed over with copper: the feathers are distinct, and lie over each other like shells. Above the tail springs an inimitable set of long beautiful feathers, adorned with a variegated eye at the end of each; these reach considerably beyond the tail; and the longest of them in many birds are four feet and a half long. This beautiful train, or tail as it is improperly called, may be expanded upwards to a perpendicular at the will of the bird. The true tail is hid beneath this group of feathers, and consists of eighteen gray brown feathers, one foot and a half long, marked on the sides with rufous gray: the scapulars and lesser wing coverts are reddish cream color, variegated with black; the middle coverts deep blue, glossed with green gold: the greatest and bastard wing rufous: the quills are also rufous; some of them variegated with rufous, blackish, and green: the belly and vent are greenish black: the thighs yellowish: the legs stout; those of the male furnished with a strong spur three quarters of an inch in length; the color of them gray brown. The female is rather less than the male. The tail is very short, being much shorter than the train, and scarcely longer than its coverts; neither are the feathers furnished with eyes. The crest on the head is similar to that on the head of the male: the sides of the head have a greater portion of white: the throat and neck are green: the rest of the body and wings are cinereous brown: the breast is fringed with white: the bill is the same: the irides are lead-colored: the legs are as in the male; but the spur is generally wanting, though in some birds a rudiment of one is seen. In some male birds all the wing coverts and scapulars are of a fine deep blue green, very glossy; but the outer edge of the wing and quills are of the common color. These birds, now so common in Europe, are of eastern origin. They are found wild in the islands of Ceylon and Java in the East Indies; and at St. Helena, Barbuda, and other West India islands. They are not natural to China; but they are found in many places of Asia and Africa. They are, however, nowhere so large or so fine as in India, in the neighbourhood of the Ganges, whence they have spread into all parts, increasing in a wild state in the warmer climes; but requiring

care in the colder regions. In ours, this species does not come to its full plumage till the third year. The female lays five or six grayish-white eggs; in hot climates twenty, the size of those of a turkey. These she lays in some secret place, at a distance from the usual resort, to prevent their being broken by the male, which he is apt to do if he find them. The time of sitting is from twenty-seven to thirty days. The young may be fed with curd, chopped leeks, barley-meal, &c., moistened; and are fond of grasshoppers, and some other insects. In five or six months they will feed as the old ones, on wheat and barley, with what else they can pick up in the circuit of their confinement. They seem to prefer the most elevated places to roost on during night; such as high trees, tops of houses, and the like. Their cry is loud and inharmonious; a perfect contrast to their external beauty. They are caught in India, by carrying lights to the trees where they roost, and having painted representations of the bird presented to them at the same time; when they put out the neck to look at the figure, the sportsman slips a noose over the head, and secures his game. In most ages they have been esteemed a salutary food. Hortensius set the example at Rome, where it was carried to the highest luxury, and sold dear: and a young peacock is thought a dainty even in the present times. The life of these birds is reckoned by some at about twenty-five years; by others 100. So beautiful a species of birds as the peacock could not long remain unknown; so early as the days of Solomon, we find, among the articles imported in his Tarshish navies, apes and peacocks. Ælian relates that they were brought into Greece from some barbarous country; and that they were held in such high esteem that a male and female were valued at Athens at 1000 drachmæ, or £32 5s. 10d. At Samos they were preserved about the temple of Juno, being sacred to that goddess; and Gellius, in his *Noctes Atticæ*, commends the excellency of the Samian peacocks. When Alexander was in India, he found vast numbers of wild ones on the banks of the Hyattis; and was so struck with their beauty as to appoint a severe punishment on any person that killed them. Peacocks' crests, in ancient times, were among the ornaments of the kings of England. Ernald de Aclent was fined to king John in '140 palfries, with sack-buts, lorains, gilt spurs, and peacocks' crests, such as would be for his credit!

4. *P. muticus* is about the size of the crested peacock: but the bill is larger and ash-colored; the irides are yellow, round the eyes red; on the top of the head is an upright crest four inches long, and shaped somewhat like an ear of corn. The color is green mixed with blue. The top of the neck and head are greenish, marked with spots of blue, which have a streak of white down the middle of each: the back is greenish blue: the breast is blue and green gold mixed: the belly, sides, and thighs are ash-color, marked with black spots, streaked with white on the belly; the wing coverts and secondaries are not unlike the back: the greater quills are green, transversely barred with black lines, but growing yellowish towards the ends; where they are

black: the upper tail coverts are fewer than those of the common peacock, but much longer than the tail; they are chestnut brown, with white shafts, and have at the end of each a large spot gilded in the middle, then blue, and surrounded with green: the legs are ash-colored, and not furnished with spurs, or they have been overlooked by those who have seen them. The female is smaller than the male; and has the belly quite black, and the upper tail coverts much shorter; the tail is green, edged with blue and white shafts. It inhabits Japan.

5. *P. Tibetanus* is about the size of a pintado, being about two feet and nearly two inches long. The bill is above an inch and a half long, and cinereous: the irides are yellow: the head, neck, and under parts, are ash-colored, marked with blackish lines: the wing covert, back, and rump, are gray, with small white dots; besides which, on the wing covert and back, are large round spots of a fine blue, changing in different lights to violet and green gold; the quills and upper tail coverts are also gray, marked with blackish lines; the quills have two round blue spots on each, like those of the coverts: on the outer webs, and on each tail feather, there are four of the same, two on each side the web; the middle coverts are the longest, the others shorten by degrees: the legs are gray, furnished with two spurs behind: the claws are blackish. This species inhabits the kingdom of Thibet.

PAVOR, *METUS*, or *TIMOR*, Fear, a Roman deity, whose worship was introduced by Tullus Hostilius, who, in a panic, vowed a shrine to him, and one to Pallor, Paleness; and therefore they are found on the coins of that family. The Ephori of Sparta erected a temple to Fear, near their tribunal, to strike an awe to those who approached it. Fear was likewise worshipped at Corinth. The poets did not forget this imaginary deity. Virgil places him in the entrance of hell, in company with diseases, old age, &c. *Æn.* vi. 273. Ovid places him in the retinue of Tisiphone, one of the furies, *Met.* iv. 485.

PAUPER, *n. s.* Lat. *pauper*. A poor person; one who receives parish assistance.

For distressed objects, who of necessity must have the whole of their support from the parish, there should be a sufficient number of small cottages built, each cottage having a piece of ground for the production of potatoes, turnips, &c.; if widely dispersed over several parts of the same parish, so much the better; they should be made to hold two persons, and one or two children, or, in lieu of the children, one or two of those *paupers* who should be found the most infirm. *Middleton's Survey of Middlesex.*

PAUSANIA, in Grecian antiquity, a festival in which were solemn games, wherein nobody contended but free-born Spartans; in honor of Pausanias the Spartan general. See PAUSANIAS.

PAUSANIAS, a Spartan king and general, who signalled himself at the battle of Platæa against the Persians. The Greeks, sensible of his services, rewarded his merit with a tenth of the spoils taken from the Persians. He was afterwards appointed to command the Spartan armies, and he extended his conquests in Asia; but the haughtiness of his behaviour created him many enemies; and the Athenians soon obtain-

ed a superiority in the affairs of Greece.—Pausanias, dissatisfied with his countrymen, offered to betray Greece to the Persians if he received in marriage, as the reward of his perfidy, the daughter of their king. His intrigues were discovered by a young man who was entrusted with his letters to Persia, and who refused to go, on recollecting that such as had been employed in that office before had never returned. The letters were given to the Ephori of Sparta, and the perfidy of Pausanias was thus discovered. He fled for safety to a temple of Minerva; and, as the sanctity of the place screened him from the violence of his pursuers, the sacred building was surrounded with heaps of stones, the first of which was carried thither by the indignant mother of the unhappy man. He was starved to death in the temple, and died about A. A. C. 474. There was a festival instituted to his honor, and an oration annually spoken in his praise, in which his actions were celebrated, particularly the battle of Platæa and the death of Mardonius. See PAUSANIA.

PAUSANIAS, a learned Greek historian and orator, in the second century, under Antoninus the philosopher. He was the disciple of Herodes Atticus; he lived for a long time in Greece; and afterwards went to Rome, where he died at a great age. He wrote an excellent description of Greece, in ten books, of which abbé Gedoin has given a French translation in 2 vols. 4to.

PAUSE, *n. s. & v. n.* Fr. *pause*; barb. Lat.

PAUSER, *n. s.* { *pausa*. Gr. *παυς*. A break or stop in point of time; an intermission; hence suspense; doubt; break; paragraph or sign marking a break: to pause and pauser follow these senses.

Neither could we ever come to any *pause*, whereon to rest our assurance this way. *Hooker.*

Solyman, *pausing* a little upon the matter, the heat of his fury being over, suffered himself to be intreated. *Kneble.*

Comes a fellow crying out for help,
And Cassio following with determined sword,
To execute upon him; this gentleman
Steps in to Cassio and entreats his *pause*.

Shakspeare.

Like a man to double business bound,
I stand in *pause* where I shall first begin,
And both neglect. *Id. Hamlet.*

Give me leave to read philosophy,
And, while I *pause*, serve in your harmony. *Shakspeare.*

The expedition of my violent love
Outruns the *pauser*, reason. *Id. Macbeth.*
Some *pause* and respite only I require,
Till with my tears I shall have quenched my fire. *Denham.*

As one who in his journey baits at noon,
Though bent on speed, so here the archangel *paused*
Between a world destroyed and world restored. *Milton.*

The punishment must always be rigorously exacted, and the blows by *pauses* laid on till they reach the mind, and you perceive the signs of true sorrow. *Locke.*

He writes with warmth, which usually neglects method, and those partitions and *pauses* which men, educated in the schools, observe. *Id.*

Our discourse is not kept up in conversation, but falls into more *pauses* and intervals than in our neighbouring countries. *Addison.*

Whilst those exalted to primeval light,
Only perceive some little *pause* of joys,
In those great moments when their god employs
Their ministry. *Prior.*

What awe did the slow solemn knell inspire,
The pealing organ, and the *pausing* choir,
And the last words that dust to dust conveyed !
Ticket.

Creation sleeps ! 'Tis as the general pulse
Of life stood still, and nature made a *pause*
An awful *pause* ! prophetic of its end. *Young.*

PAUSIAS, a famous ancient painter, the inventor of encaustic painting, was a native of Sicyon. He was a disciple of Pamphilus, and flourished about A. A. C. 352. He drew a beautiful picture of his mistress Glycere, for which Lucullus gave two talents. The Sicyonians being obliged to sell his pictures, to clear an enormous debt, they were all purchased by M. Scaurus, the Roman.

PAUTE, a large river of Quito, in the province of Cuenca, which rises in the Tarqui Mountains, to the south of that city. It finally assumes the name of the Mayer and enters the Santiago in S. lat. 4° 7'.

PAUW (Cornelius de), a learned German canon, was born at Amsterdam in 1739, and died in 1799, at Xantem, near Aix-la-Chapelle; he was uncle to Anarcharsis Clootz, of the French revolution. His principal works are, *Recherches Philosophiques sur les Americains*, les Egyptiens, et les Chinois, 7 vols. 1768; and *Recherches Philosophiques sur les Grecs*, 2 vols. 8vo. 1787.

PAW, *n. s., v. n., & v. a.* Wel. *paucen*; Teut. and Belg. *pawt*; Qu. the Pers. and Hind. *pa*? The foot of a wild beast; in contempt, the hand: to draw the fore foot on the ground; strike with the fore foot.

The Lord that delivered me out of the paw of the lion, and out of the paw of the bear; he will deliver me out of the hand of this Philistine.

1 Sam. xvii. 37.

He *paoweth* in the valley, and rejoiceth in his strength.

Job xxxix. 21.

One chose his ground,
Whence rushing he might surest seize them both,
Griped in each paw. *Milton's Paradise Lost.*

The bee and serpent know their stings, and the bear the use of his paws. *More against Atheism.*

Each claims possession,

For both their paws are fastened on the prey.

Dryden.

Be civil to the wretch imploring,
And lay your paws upon him without roaring. *Id.*

The fiery courser, when he hears from far
The sprightly trumpets and the shouts of war,
Pricks up his ears, and trembling with delight
Shifts place, and paws, and hopes the promised fight.
Id.

If lions had been brought up to painting, where you have one lion under the feet of a man, you should have had twenty men under the paw of a lion.

L'Ettrange.

The bear, that tears the prey, and when pursued,
lest he become a prey, goes backward into his den
that the hunter rather mistakes, than finds the way
of his paw. *Holiday.*

'Tis hot courser pawed the Hungarian plain,
And adverse legions stood the shock in vain.

Ticket.

The' impatient courser pants in every vein,
And *pawing*, seems to beat the distant plain;
Hills, vales, and floods appear already crossed,
And, ere he starts, a thousand steps are lost.

Pope.

Once, a fiery horse, *pawing* with his hoof, struck a hole in my handkerchief. *Swift.*

PAWLET, a river which rises in Vermont, and runs north-west into Wood Creek, in New York.

PAWLET, a post town of Rutland county, Vermont, thirty-three miles north of Bennington. Population 2233. This is a considerable agricultural township, and has a village containing some manufactures and trade. Haystack Mountain is in this township.

PAWLING, a post town of Dutchess county, New York, twenty miles south-east of Poughkeepsie, 105 south of Albany. Population 1756.

PAWN, *n. s.* Pers. *paan*. A common man at chess.

Here I a pawn admire,
That still advancing higher,
At top of all became
Another thing and name.

Cowley.

PAWN, *n. s. & v. a.* } Fr. and Swed. *pan*;
PAWN-BROKER. } Belg. *paand*; Lat. *pignus*. A pledge given as security for money: the state of being pledged: a pawnbroker is one who lends money upon pledges.

Her oath for love, her honour's pawn.

Shakespeare.

Sweet wife, my honour is at pawn.
And, but my going, nothing can redeem it. *Id.*
Redeem from broken pawn the blemished crown,
Wipe off the dust that hides our sceptre's guilt. *Id.*

I hold it cowardice

To rest mistrustful, where a noble heart
Hath pawned an open hand in sign of love. *Id.*
Let's lead him on with a fine baited delay, till he
hath pawned his horses. *Id.*

I dare pawn down my life for him, that he hath writ this to feel my affection to your honour. *Id.*

Will you thus break your faith?

—I pawned you none:

I promised you redress.

Id. Henry I.

I'll pawn the little blood which I have left,
To save the innocent. *Id. Winter's Tale.*
As for mortgaging and pawning, men will not take
pawns without use; or they will look for the forfeiture. *Bacon.*

He retains so much of his primitive esteem, that abroad his very word will countervail the bond or pawn of another. *Howel.*

If any thought annoys the gallant youth,
'Tis dear remembrance of that fatal glance,
For which he lately pawned his heart. *Waller.*

She who before had mortgaged her estate,
And pawned the last remaining piece of plate.

Dryden.

Here's the very heart, and soul, and life-blood of Gomez; pawns in abundance, till the next bribe helps their husbands to redeem them.

Id. Spanish Fryar.

The usurers or money-changers were a sort of a scandalous employment at Rome; those money-scriveners seem to have been little better than our pawnbrokers. *Arbuthnot.*

One part of the nation is pawned to the other, with hardly a possibility of being ever redeemed. *Swift.*

No man can mortgage his injustice as a pawn for his fidelity.

Burke.

There shall he learn, ere sixteen winters old,
That authors are most useful *pawned*, or sold;
That pedantry is all that schools impart,
But taverns teach the knowledge of the heart.

Cowper.

Pawn. According to our law, the party who pawns goods, hath a general property in them; they cannot be forfeited by the pawnee, or party who hath them in pawn, for any offence of his; nor be taken in execution for his debt, neither may they otherwise be put in execution, till the debt for which they are pawned is satisfied. Litt. Rep. 332. For the absolute property is in another; therefore they are not alienable, nor, by consequence, forfeitable; because they cannot be forfeited without loss and danger to the absolute owner; and all qualified possessors do take the property under the restriction to preserve the property of the right owner. And if a man pawns goods for money, and afterwards a judgment is had against the pawner at the suit of one of the creditors; the goods in the hands of the pawnee shall not be taken in execution, until the money is paid to the pawnee: because he had a qualified property in them, and the judgment creditor only an interest. 3 Bulst. 17. And when a person hath jewels in pawn for a certain sum, and he who pawned them is attainted, the king shall not have the jewels unless he pay the money. For the alteration of the general property doth not alter the special property in the pawnee. On this principle he may assign the pawn over to another, subject to the same conditions: and, if the pawnee die before redeemed, his executors shall have it upon the like terms as he had it.

If goods pawned are perishable, and, no day being set for payment of the money, they lie in pawn till spoiled, without any default in him who hath them in keeping; the party who pawned them shall bear the damage; for it shall be adjudged his fault that he did not redeem them sooner: and he to whom pawned may have action of debt for his money. Where goods are pawned for money borrowed, without a day set for redemption, they are redeemable at any time during the life of the borrower. They may be redeemed after the death of him to whom pawned; but not after the death of him who pawned the goods. 2 Cro. 245; Noy 137; 1 Bulst. 9. Where a day is appointed, and the pawner dieth before the day, his executors may redeem the pawn at the day, and this shall be assets in their hands. If goods are redeemable at a day certain, it must be strictly observed; and the pawnee, in case of failure of payment at the day, may sell them. 1 Rol. Rep. 181, 215. But still the right owner, as in case of a mortgage, has his redemption in equity.

Where a broker or pawnee refuses (upon tender of the money) to redeliver the goods in pawn, he may be indicted; because, being secretly pawned, it may be impossible to prove a delivery for want of witnesses, if trover should be brought for them. If goods are lost, after the tender of money, the pawnee is liable to make them good to the owner; for, after tender, he is a wrongful detainer; and he who keeps goods wrongfully must answer for them at all events. But if they

are lost before a tender, it is otherwise; the pawnee is not liable, if his care of keeping them was exact; and the law requires nothing of him, but only that he should use an ordinary care in keeping the goods, that they may be restored on payment of the money for which they were deposited; and in such case, if the goods are lost, the pawnee hath still his remedy against the pawner for the money lent.

If the pawnee be robbed, he is not in general answerable; though if he useth the thing as a jewel, watch, &c., that will not be the worse for wearing, which he may do, it is at his peril; and if he is robbed, he is answerable to the owner, as the using occasioned the loss, &c. If the pawn is of such a nature, that the keeping is a charge to the pawnee, as a cow, or a horse, &c., he may milk the one, or ride the other; and this shall go in recompense for his keeping. Things, which grow the worse by usage, he may not use.

If the vender of a leasehold estate deliver the conveyance as an escrow, to take effect on payment of the residue of the purchase-money, the property in the title-deeds of the estate is so vested in the vendee, that the vendor obtaining possession of those, and pawning them, does not confer on the pawnee a right to detain them, after tender of the purchase-money. 6 W. P. Taunton, 12. A factor cannot pawn the goods of his principal: he to whom goods are delivered for safe custody cannot pawn them: and there can be no market-overt for pawning. Where money is lent on a pledge, the borrower is personally liable to the payment, unless there be an agreement to the contrary.—*Strange*, 919.

PAWNBROKERS. By the stamp acts, pawnbrokers are annually to take out a license.

By stat. 39, 40 Geo. III. c. 99, rates of profit are allowed to pawnbrokers, and regulations are made to prevent oppression by them, viz. (as given in Tomlin's Dictionary), for every pledge upon which there shall have been lent not exceeding 2s. 6d. one halfpenny is allowed as interest, &c., for any time during which the said pledge shall remain in pawn, not exceeding one calendar month; and the same for every month afterwards, including the current month in which such pledge shall be redeemed, although such month shall not be expired. For 5s. one penny; 7s. 6d. one penny halfpenny; 10s. two-pence; 12s. 6d. two-pence halfpenny; 15s. threepence; 17s. 6d. three-pence halfpenny; £1. four-pence; and so on progressively, and in proportion for any sum not exceeding 40s.; and for any intermediate sum between 2s. 6d. and 40s. at the rate of four-pence for 20s.: and for every sum exceeding 40s., and not exceeding 42s. eight-pence; and for every sum exceeding 42s. and not exceeding £10, at the rate of three-pence, and no more for the loan of every 20s. of such money lent by the calendar month; and so in proportion for any fractional sum. § 1, 3.

A party applying for the redemption of goods pawned, within seven days after the expiration of any month, may redeem them without paying any thing for the seven days, and applying after seven, and within fourteen days, pays the profit for one month and a half of another month; but after the expiration of the first fourteen days the

pawnbroker may take for the whole month. § 5. Entries to be made and duplicates given. § 6, 7. Any person fraudulently pawning the goods of another, and convicted before a justice, shall forfeit from £5 to 20s., and also the value of the goods pawned, &c., to be ascertained by the justice; and, on failure of payment, may be committed to the house of correction, for not more than three months, and be publicly whipped; the forfeitures, when paid, to be applied towards making satisfaction to the party injured, and defraying the costs; the overplus, if any, to the poor of the parish. § 8. Any person counterfeiting or altering a duplicate, may be seized and taken before a justice; who is to commit the party to the house of correction for not more than three months, nor less than one. § 9.

If any person shall offer to pawn any goods, refusing to give a satisfactory account of himself and the goods; or if there shall be reason to suspect that such goods are stolen; or if any person not entitled shall attempt to redeem goods pawned, they may be taken before a justice, who shall commit them for further examination: and if it appear that the goods were stolen, or illegally obtained, or that the person offering to redeem the same has no title or pretence to them, the justice is to commit him to be dealt with according to law, where the nature of the offence shall authorise such commitment by any other law; or otherwise, for not more than three months. § 10. Persons buying or taking in pledge unfinished goods, or any linen, &c., entrusted to be washed, shall forfeit double the sum lent, and restore the goods. § 11.

A justice may grant a search-warrant, in executing which, a peace-officer may break open doors, and the goods, if found, shall be restored to the owner. § 12, 13. Pawnbrokers refusing to deliver up goods pledged within one year, on tender of the money lent, and interest, on conviction, a justice is empowered to commit the offender till the goods be delivered up, or reasonable satisfaction made. § 14.

Persons producing notes are not to be deemed owners, unless on notice to the contrary from the real owner. § 15. Duplicates being lost, the owners, on oath before a justice, shall be entitled to another from the pawnbroker. § 16.

Goods to be sold by public auction after the expiration of one year, being exposed to public view, and catalogues thereof published, and two advertisements of sale by the pawnbroker to be inserted in some newspaper two days at least before the first day's sale, under penalty of £10 to 40s. to the owner. § 17. Pictures, prints, books, statues, &c., shall be sold only four times in a year. § 18. Pawnbrokers receiving notice from the owners of goods before the expiration of a year, shall not dispose of them, until after the expiration of three months from the end of the said year. § 19.

Pawnbrokers to enter an account of sales in their books of all goods pawned for upwards of 10s.; and in case of any overplus by the sale, upon demand within three years, it shall be paid to the owner, the necessary costs, principal and interest being deducted; persons possessing duplicates entitled to the inspecting of the book;

and in case the goods shall have sold for more than the sum entered, or the further entries not made, or the overplus is refused to be paid, the offender shall forfeit £10 and treble the sum lent, to be levied by distress. § 20. Pawnbrokers shall not purchase goods whilst in their custody, or suffer them to be redeemed for that purpose; nor lend money to any person appearing to be under twelve years of age, or intoxicated, or purchase duplicates of other pawnbrokers, or buy any goods before eight in the forenoon, and after seven in the evening; nor receive any goods in pawn before eight in the forenoon, or after eight at night, between Michaelmas and Lady-day, and before seven o'clock in the forenoon, and after nine at night, during the remainder of the year; except till eleven o'clock on the evenings of Saturday, and that preceding Good Friday and Christmas-day; nor carry on the trade on any Sunday, Good Friday, or Christmas-day, or any fast or thanksgiving-day. § 20.

Pawnbrokers are to place in their shops a table of rates allowed by this act. § 21. Pawnbroker's Christian and surname, and business, to be written over the door, under a penalty of £10, half to the informer and half to the poor. § 23. Pawnbrokers having sold goods illegally, or having embezzled or injured goods, justices may award reasonable satisfaction to the owners, in case the same shall not amount to the principal and profit; or, if it does, the goods shall be delivered to the owner, without paying any thing, under a penalty of £10. § 24. They are to produce their books before any justice, if required, on a penalty of £10 to £5. § 25.

Penalty on pawnbrokers neglecting to make entry £10, and for every offence against this act, where no penalty is provided, 40s. to £10, half to the informer, the remainder to the poor. § 26. But complaint shall, in all cases, be made within twelve months § 27.

No person convicted of a fraud or felony may be an informer under this act. § 29. Churchwardens to prosecute for every offence at the expense of the parish, on notice from a justice. § 28. This act does not extend to persons lending money upon goods at 5 per cent. interest. But to extend to the executors, &c., of pawnbrokers and pawners. § 31. The form of conviction is settled by § 33; and an appeal given to the quarter sessions. § 35.

PAWNEES, native Indians of Louisiani, on, and west of, the Platte. Population 5500.

PAWTUCKET, a post town, partly in North Providence, Rhode Island, and partly in Seekonk, Massachusetts, on the Pawtucket: four miles north-east of Providence. Population about 2000. It is finely situated on the beautiful and interesting Falls of Pawtucket, and has very extensive and flourishing manufactures. It contains two houses of public worship, one for Episcopalians, and one for Baptists; two banks, nine cotton manufactories, containing about 10,000 spindles; two screw manufactories, two furnaces, one nail manufactory, one oil mill, one rolling mill, one fulling mill, and two corn mills.

PAWTUCKET, a river of Rhode Island, which rises in Massachusetts, where it is called the

Blackstone, passes through the north-east part of Rhode Island; and flows into Narraganset Bay, just below Providence. Below the falls it is called the Seekhonk. The descent at the falls is about fifty feet.

PAWTUXET, another river of Rhode Island, which runs into Narraganset Bay, four miles below Providence.

PAX, the goddess of peace, among the ancients. The Athenians erected a statue of her, representing her as holding Plutus, the god of wealth, in her lap. They first erected an altar to her, after Cimon's victory over the Persians; (Plutarch :) or after that of Timotheus over the Spartans. Nepos. The Romans represented her with an olive branch in the one hand, and the horn of plenty in the other.

PAXO (the ancient Ericusa), a small island of the Mediterranean, seven miles south of Corfu: it is five miles long and two broad, rocky, and generally barren, but affords some oil, wine, and fruits, in small quantity. It has three good ports, of which that named Porto Gai, perhaps the best, contains a chapel on the site of the supposed residence of St. Paul. The absence of any venomous or hideous reptile in this island is ascribed to this saint; and, according to the popular belief, he has even bestowed greater benefits on the island than he himself experienced; for a person of the neighbouring countries, where such reptiles are found, being bitten, has only to ascend a hill, and get a sight of Paxo, to be cured! San Nicholo, the only town of the island is on the east. Anti-Paxo, a league south of Paxo, is uninhabited and uncultivated.

PAY, *v. a. & n. s.* } *Fr. payer; Ital. pagare;*
 PAY'ABLE, *adj.* } *Span. and Port. pagar, à*
 PAY'-DAY, *n. s.* } *Lat. pacare. To satisfy;*
 PAY'ER, } *discharge a debt: hence*
 PAY'-MASTER, } *reward; chasten; atone;*
 PAYMENT. } *discharge any obligation:*
 as a noun substantive, hire; wages; a servant's or soldier's reward: payable is, due; to be paid; possible to be paid: pay-day, payer, and pay-master, seem obvious in their meaning: payment is, the act of paying; thing paid; or any reward.

An hundred talents of silver did the children of Ammon pay. 2 *Chronicles* xxvii. 5.

The wicked borroweth, and payeth not again.

I have peace-offerings with me: this day have I paid my vows. *Psalms.*
Proverbs vii. 14.

She does what she will, say what she will, take all, pay all. *Shakspeare. Merry Wives of Windsor.*

If this prove true, they'll pay for't. *Shakspeare.*

You have done enough, and have performed A saint-like sorrow; and indeed paid down More penitence, than done trespass. *Id.*

I followed me close, and, with a thought, seven of the eleven I paid. *Id. Henry IV.*

Come on, brave soldiers, doubt not of the day; Aud, that once gotten, doubt not of large pay. *Shakspeare.*

Thy husband commits thy body To painful labour both by sea and land, And craves no other tribute at thy hands But love, fair looks, and true obedience; Too little payment for so great a debt. *Id.*

Give her an hundred marks.

—An hundred marks! by this light I'll ha' more.

An ordinary groom is for such payment. *Id.*

The marriage-money the princess brought, was payable ten days after the solemnization. *Bacon.*

Persons of eminent virtue, when advanced, are less envied, for their fortune seemeth but due unto them; and no man envieth the payment of a debt. *Id.*

Howsoever they may bear sail for a time, yet are they so sure paymasters in the end, that few have held out their lives safely. *Hayward.*

Forty things more, my friends, which you know true,

For which, or pay me quickly, or I'll pay you.

Ben Jonson.

If we desire that God should approve us, it is a sign we do his work, and expect him our paymaster. *Taylor.*

Bold Prometheus, whose untamed desire Rivalled the sun with his own heavenly fire, Now doomed the Scythian vulture's endless prey, Severely pays for animating clay. *Roscommon.*

Money, instead of coming over for the pay of the army, has been transmitted thither for the pay of those forces called from thence. *Temple.*

The king and prince

Then paid their offerings in a sacred grove

To Hercules.

Dryden.

She I love, or laughs at all my pain, Or knows her worth too well; and pays me with disdain. *Id. Knight's Tale.*

The soldier is willing to be converted, for there is neither pay nor plunder to be got. *L'Estrange.*

Men of parts, who were to act according to the result of their debates, and often pay for their mistakes with their heads, found those scholastic forms of little use to discover truth. *Locke.*

Riches are got by consuming less of foreign commodities, than what by commodities or labour is paid for. *Id.*

Labourers pay away all their wages, and live upon trust till next payday. *Id.*

To repay by a return equivalent is not in every one's power; but thanks are a tribute payable by the poorest. *South.*

The wages that sin bargains with the sinner are life, pleasure, and profit; but the wages it pays him with are death, torment, and destruction: he that would understand the falsehood and deceit of sin thoroughly, must compare its promises and its payments together. *Id.*

Here only merit constant pay receives, Is blest in what it takes, and what it gives. *Pope.*

It is very possible for a man that lives by cheating to be very punctual in paying for what he buys; but then every one is assured that he does not do so out of any principle of true honesty. *Law.*

For then the farmers come jog, jog.

Along the miry road,

Each heart as heavy as a log,

To make their payments good. *Concise.*

PAYNE (Nevil), an English dramatic writer, who flourished under Charles II. He published three plays, viz.:—1. The Fatal Jealousy; a tragedy, 4to. 1673. 2. The Morning Ramble, or the Town Humors; a comedy; 4to. 1673. 3. The siege of Constantinople; a tragedy; 4to. 1675.

PAYSE, *v. n. 2* Used by Spenser for poise

PAYS'ER, *n. s.* } To balance: one who weighs.

Ne was it island then; ne was it payed

Amid the ocean waves, but all was desolate.

Spenser.

To manage this coinage, porters bear the tin, *paytors* weigh it, a steward, comptroller, and receiver, keep the account. *Corew.*

PAZ, a town of Mexico, in the intendency of Valladolid: 120 miles N.N.W. of Mexico. Population about 3000. It is also the name of several insignificant settlements.

PAZ, LA, a district formerly included in Peru, but now in the state of Buenos Ayres, north of Sicasica, and consisting only of a small district round the city of the same name, in the vicinity of the western cordillera of the Andes. The surface is rough and its temperature cold. The adjacent cordillera, only twelve leagues distant, is high: one of its summits, called Illimani, is covered with perpetual snow, but the city is not subject to extreme cold, enjoying a salubrious and rather warm air. The snow-clad mountains, the fertile valleys, and the fine river of the neighbourhood, give charms to its scenery rarely equalled. The higher grounds are covered with forests, which afford shelter to bears, jaguars, pumas, &c. Some gold is found in the river, when it is increased by the melting of the snow. In 1730 an Indian discovered in this stream a lump of gold of such a size that it was bought for 12,000 piastres. The country is fertile in grain and fruits.

PAZ, LA, a city, the capital of the above district, founded in 1548, and so called in memory of the public tranquillity being settled, by the defeat of Gonzalo Pizarro. Beside the cathedral, the city has four churches, five convents, and three nunneries. According to Helms, it suffered considerably by the revolt of the Indians; but it had in his time 20,000 inhabitants. One great article of trade here is Paraguay tea. The bishop has very considerable revenues: 120 miles E.S.E. of Arequipa, 288 south-east of Cuzco, and 612 south-east of Lima.

PEA, *n. s.* Sax. *pira*; Fr. *pois*; Lat. *pi-PEASE*, } *sum.* When it is mentioned as
PEASE-COD, } the plural of a single body, makes
PEA-SHELL, } peas; but, when collectively, as
food, or a species, it is called *pease*, anciently
peason: the *peascod* and *pea-shell* are the husk
of peas.

A *pea* hath a papilionaceous flower, and out of his empalement rises the pointal, which becomes a long pod full of roundish seeds; the stalks are fistulous and weak, and seem to perforate the leaves by which they are embraced; the other leaves grow by pairs along the midrib, ending in a tendril. The species are sixteen. 1. The greater garden *pea*, with white flowers and fruit. 2. Hotspur *pea*. 3. Dwarf *pea*. 4. French dwarf *pea*. 5. *Pea* with an esculent husk. 6. Sickle *pea*. 7. Common white *pea*. 8. Green rouncival *pea*. 9. Grey *pea*. 10. Maple rouncival *pea*. 11. Rose *pea*. 12. Spanish moretto *pea*. 13. Marrowfat or Dutch admiral *pea*. 14. Union *pea*. 15. Sea *pea*. 16. Pig *pea*. *Miller.*

Sow *peason* and beans in the wane of the moon;
Who soweth them sooner, he soweth too soone.

Thou art a shealed *peascod*.

Shakspeare. King Lear.

I saw a green caterpillar as big as a small *peascod*.

Walton.

As *peascods* once I plucked, I chanced to see
One that was closely filled with three times three.
I o'er the door the spell in secret laid. *Gay.*

Pease, deprived of any aromatic parts, are mild and demulcent; but, being full of aerial particles, are flatulent. *Arbuthnot.*

Calces o' fossils, earth, and trees;

True sal-marimum o' the seas;

The farina of beans and *pease*;

He has 't in plenty;

Aqua-fortis, what you please,

He can content ye. *Burns.*

PEA, in botany. See *PISUM*.

PEA CHICK, See *CICER*.

PEACE, *n. s. & interj.*

PEACE'ABLE, *adj.*

PEACE'ABLENESS, *n. s.*

PEACE'ABLY, *adv.*

PEACE'FUL, *adj.*

PEACE'FULLY, *adv.*

PEACE'FULNESS,

PEACE-MAKER,

PEACE-PARTED.

Fr. *pair*; Ital. *pace*;

Span. Port. and Lat.

par. Quiet; stillness;

rest; respite from war.

disturbance, or terror;

reconciliation of dif-

ferences; state of

agreement or unity.

In law, the general

security and quiet which the king warrants to his subjects, and of which he therefore avenges the violation; every forcible injury is a breach of 'the king's peace:' as an interjection, a word commanding silence: peaceable is, quiet; undisturbed; free from war or tumult; of quiet disposition: peaceably and peaceableness the corresponding adverb and noun substantive: peaceful is a poetical synonyme of peaceable: peace-maker, one who reconciles differences, or disagreeing parties: peace-parted, dismissed in peace.

These men are *peaceable*, therefore let them dwell in the land and trade. *Genesis xxxiv. 21.*

A sacrifice of *peace*-offering offer without blemish.

Lev. iii. 1.

Peace be unto thee, fear not, thou shalt not die.

Judges vi. 23.

If I have rewarded evil unto him that was at peace with me, let the enemy persecute my soul.

Psalms vii. 4.

Blessed are the *peace-makers*, for they shall be called the children of God. *Matt. v. 9.*

The God of hope fill you with all joy and *peace* in believing, that ye may abound in hope. *Romans.*

Peace! fear, thou comest too late, when already the arm is taken. *Sidney.*

The laws were first intended for the reformation of abuses and *peaceable* continuance of the subject.

Spenser.

To his crown she him restored,

In which he died, made ripe for death by eld,

And after willed it should to her remain,

Who *peaceably* the same long time did weld.

Spenser.

All assembled here in arms against God's *peace* and the king's, we charge you to repair to your dwelling places. *Shakspeare.*

Shallow, you have yourself been a great fighter, though now a man of *peace*.

Well, *peace* be with him that hath made us heavy!

—*Peace* be with us, lest we be heavier! *Id.*

'Twill out;—I *peace!*

No, I will speak as liberal as the air. *Id.*

The pangs of Death do make him grin;

Disturb him not, let him pass *peaceably*. *Id.*

Think us

Those we profess, *peacemakers*, friends, and servants.

Shakspeare.

We should profane the service of the dead,

To sing a requiem, and such rest to her

As to *peaceparted* souls. *Id. Hamlet.*

There be two false *peaces* or unities: the one grounded upon an implicit ignorance. *Bacon.*

n an examination, a freed servant, who had much power with Claudius, very saucily had almost all the words: and, amongst other things, he asked in scorn one of the examinates, who was a freed servant of Scribonianus; I pray, Sir, if Scribonianus had been emperor, what would you have done? he answered, I would have stood behind his chair and held my peace.

The king gave judgment against Warren, and commanded that Sherborn should hold his land in peace.

Peace, good reader, do not weep;

Peace, the lovers are asleep. *Crashaw.*

Plant in us all those precious fruits of piety, justice, and charity, and peaceableness, and bowels of mercy toward all others. *Hammond's Fundamentals.*

Preserve us in peace, so preserve us in peace, that war may be always more odious to us than necessity.

But peace, I must not quarrel with the will Of highest dispensation. *Milton's Agonistes.*

Silence, ye troubled waves, and thou deep, peace! Said then the omnific word. *Milton.*

As one disarmed, his anger all be lost; And thus with peaceful words upraised her soon.

The Chaldeans flattered both Cæsar and Pompey with long lives and a happy and peaceable death; both which fell out extremely contrary. *Hale.*

Religion directs us rather to secure inward peace than outward ease, to be more careful to avoid everlasting torment than light afflictions. *Tillotson.*

I prythee peace! Perhaps she thinks they are too near of blood.

She said, and held her peace: Æneas went Sad from the cave. *Dryden.*

The peaceful power that governs love repairs To feast upon soft vows and silent prayers. *Id.*

Our loved earth; where peacefully we slept, And far from heaven quiet possession kept. *Id.*

The Dane and Swede, roused up to fierce alarms, Bless the wise conduct of her pious arms; Soon as her fleets appear, their terror cease, And all the northern world lies hushed in peace. *Addison.*

Lie, Philo, untouched on my peaceable shelf, Nor take it amiss, that so little I heed thee; I've no envy to thee, and some love to myself, Then why should I answer; since first I must read thee? *Prior.*

Succeeding monarchs heard the subject's cries, Nor saw displeased the peaceful cottage rise. *Pope.*

The reformation of England was introduced in a peaceable manner, by the supreme power in parliament. *Swift.*

The balance of power was provided for, else Pisistratus could never have governed so peaceably, without changing any of Solon's laws. *Id.*

Farewell my friends! Farewell my foes!

My peace with these, my love with those—

The bursting tears my heart declare, Farewell the bonny banks of Ayr! *Burns.*

But what have these done, their far Remote descendants, who have lived in peace, The peace of heaven, and in her sunshine of Piety? *Byron.*

PEACE, TEMPLE OF, a celebrated temple at Rome, which was consumed by fire A. D. 191; which Dio Cassius supposes began in the adjoining houses. Be that as it may, the temple, with all the surrounding buildings, was reduced to ashes. That magnificent structure had been raised by Vespasian after the destruction of Je-

rusalem, and enriched with the spoils and ornaments of the temple of the Jews. The ancients speak of it as one of the most stately buildings in Rome. There men of learning used to hold their assemblies, and lodge their writings, as many others deposited their jewels, and whatever else they esteemed of great value. It was likewise made use of as a kind of magazine for the spices brought by the Roman merchants out of Egypt and Arabia; so that many rich persons were reduced to beggary, all their valuable effects and treasures being consumed in one night, with the temple.

PEACE RIVER, or Unjiah River, a river of North America, which has its rise, according to Mackenzie, in the Rocky Mountains, lat. 54° 24' N., and long. 121° W., or only a few miles from that of the Columbia, which, taking an opposite direction, falls into the Pacific Ocean. After a long winding course, during which it is increased by many large streams, it passes the Lake of the Hills, and is called Slave River. It now runs through Slave Lake, and afterwards receiving the name of Mackenzie's River, emptying itself into the frozen Ocean, in 70° N. lat. and about 135° W. long. Its stream is from 200 to 800 yards wide, generally navigable, except within the Rocky Mountains, when its course is much interrupted by rapids. Where it falls into the Slave River it is upwards of a mile broad; and the country between this and the Lake of the Hills is frequently inundated by it.

PEACH, *v. a.* Corrupted from IMPEACH. A slang term for to accuse of a crime.

If you talk of *peaching*, I'll *peach* first, and see whose oath will be believed; Ill trounce you. *Dryden.*

PEACH, *n. s.* } French *peache*; Ital. }
PEACH-COLORED, *adj.* } *persio*, *pecco*; Port. }
passigo; Span. *persiga*; Lat. *persica*. (Evi- }
dently from Persia.) A tree and fruit. See below.

One Mr. Caper comes to jail at the suit of Mr. Threepile the mercer, for some four suits of peach-coloured sattin, which now peaches him a beggar.

Shakespeare. Measure for Measure.

September is drawn with a cheerful countenance: in his left hand a handful of millet, withal carrying a cornucopia of ripe peaches, pears, and pomegranates. *Peacham.*

The sunny wall Presents the downy peach.

Thomson's Autumn.

While glossy and smooth, and as soft as the skin Of a delicate peach, is the down of her chin; But nothing unpleasant, or sad, or severe, Or that indicates life in its winter—is here.

Cowper

PEACH. See AMYGDALUS.

PEACHAM, a post town of Caledonia county, Vermont; six miles south of Danville, fifty-one north of Dartmouth College. Population 1301. This is a pleasant and valuable agricultural town, and it has a small village containing an academy, and a Congregational meeting-house.

PEACHICK, *n. s.* Pea and chick. The chicken of a peacock.

Does the snivelling *peachick* think to make a cuckold of me? *Southern.*

PEACOCK, *n. s.* } Sax. *papa*; Lat. *pavo*.
PE'AKEN. } Perhaps, originally, peak

cock, says Dr. Johnson, from the tuft of feathers on its head; the peak of women being an ancient ornament; if it be not rather a corruption of Fr. *beaucoq*, from the more striking lustre of its spangled train. A bird remarkable for the beauty of his feathers, and particularly of his tail.

The peacock, not at thy command, assumes
His glorious train; nor ostrich her rare plumes.

Sandys.

Let frantick Talbot triumph for a while;
And, like a peacock, sweep along his tail.

Shakespeare.

The birds that are hardest to be drawn are the
tame birds; as cock, turkey-cock and peacock.

Peacham.

The peacock's plumes thy tackle must not fail,
Nor the dear purchase of the sable's tail.

Gay.

The self-applauding bird the peacock see—

Mark what a sumptuous Pharisee is he!
Meridian sunbeams tempt him to unfold
His radiant glories, azure, green, and gold.

Cowper.

PEACOCK, in ornithology. See PAVO.

PEACOCK FISH, in ichthyology, *Pinna* ani radiis 55, caudali falcata. The body is of various colors; the fin of the anus has fifty-five streaks, and its tail is in the form of a crescent. The head is without scales; it is brown upon the upper part, yellow above the eyes, and of a silver color on the sides. The back is round, and adorned with beautiful blue streaks in a serpentine form, and the belly bright as silver. The fins of the breast are round, and, like those of the belly, have a yellow ground with a gray border; that of the back is of a violet color; that of the anus is straw colored; and, lastly, that of the tail is yellow on the sides, red towards the middle, and bordered with a deep blue. Its length is not known. There is a variety of this fish found only in the Indian seas, and therefore called the Indian peacock fish; which is thus described in the language of Linneus: *Pavo pinna caudali forcipata: spinis dorsalibus 14: ocello ceruleo pone oculos*. It has the fin of its tail forked; fourteen sharp points or prickles on the back, with a round blue streak behind the eyes. The body of this fish is of an elliptical form; the head is covered with scales to the tip of the snout; the two jaws are armed with long and sharp teeth; the ball of the eye is black, and the iris of a white color with a mixture of green. At the insertion of the fins of the belly is found a bony substance. The head, back, and sides, are of a yellow color, more or less deep, and covered with lines or streaks of sky blue. These colors are so agreeably mixed that they resemble the elegance of the peacock's tail.

PEAK, *n. s. & v. n.* Sax. *peac*; Fr. *pique*, *pic*, *pica*. The pointed top of a hill or eminence. See BEAK. As a verb, to look sickly or sharp featured; hence, look mean.

Weary se'ennights, nine times nine,
Shall he dwindle, peak, and pine.

Shakespeare. Macbeth.

I, a dull and muddy mettled rascal, peak,
Like John a dreams, unpregnant of my cause.

Shakespeare.

The peaking cornuto her husband, dwelling in a continual larum of jealousy, comes in the instant of our encounter. *Id.*

Thy sister seek,

Or on Meander's bank of Latmus' peak.

Prior.

PEAK OF DERBYSHIRE, a chain of very high mountains in that county, famous for the mines they contain, and for their remarkable caverns. The most remarkable of these are Pool's Hole and Elden Hole. The former is a cave at the foot of a high hill called Coitmoos, so narrow at the entrance that passengers are obliged to creep on all-fours; but it soon opens to a considerable height, extending to above a quarter of a mile, with a roof somewhat resembling that of an ancient cathedral. By the petrifying water continually dropping in many parts of the cave are formed a variety of curious figures and representations of the works both of nature and art. There is a column here as clear as alabaster, which is called The Queen of Scots' Pillar, because queen Mary is said to have proceeded thus far when she visited the cavern. After sliding down the rock a little way, is found the dreary cavity turned upwards: following its course, and climbing from crag to crag, the traveller arrives at a great height, till the rock, closing over his head on all sides, puts an end to any further subterraneous journey. Just at turning to descend, the attention is caught by a chasm, in which is seen a candle glimmering at a vast depth underneath. The guides say that the light is at a place near Mary queen of Scots' pillar, and no less than eighty yards below. It appears frightfully deep indeed to look down; but perhaps does not measure any thing like what it is said to do. If a pistol be fired by the queen of Scots' pillar, it would make a report as loud as a cannon. Near the extremity there is a hollow in the roof, called the Needle's Eye; in which if a candle is placed it will represent a star in the firmament to those who are below. At a little distance from this cave is a small clear stream consisting of hot and cold water, so near each other, that the finger and thumb of the same hand may be put, the one into the hot water and the other into the cold. Elden Hole is a dreadful chasm in the side of a mountain; which, before the end of the seventeenth century, was thought to be altogether unfathomable. In 1699 captain Sturmy descended by ropes fixed at the top of an old lead-ore pit, four fathoms almost perpendicular, and thence three fathoms more obliquely, between two great rocks. At the bottom of this he found an entrance into a very spacious cavern, whence he descended along with a miner for twenty-five fathoms perpendicular. At last they came to a great water, which he found to be twenty fathoms broad and eight deep. As they walked by the side of this water, they observed a hollow in the rock some feet above them. The miner went into this place, which was the mouth of another cavern; and walked for about seventy paces in it. The floor of these caverns is a kind of white stone enamelled with lead ore, and the roofs are encrusted with shining spar. On his return from this subterraneous journey,

captain Sturmy was seized with a violent headache, which, after continuing four days, terminated in a fever, of which he died in a short time. See DERBYSHIRE.

PEAK OF TENERIFFE. See TENERIFFE.

PEAK'S HOLE, AND POOL'S HOLE, two remarkable horizontal springs under mountains; the one near Castletown, the other just by Buxton. They seem to have owed their origin to the springs which have their current through them; when the water had forced its way through the horizontal fissures of the strata, and had carried the loose earth away with it, the loose stones must fall down of course: and, where the strata had few or no fissures, they remained entire; and so formed these very irregular arches, which are now so much wondered at. The water which passes through Pool's Hole is impregnated with particles of lime-stone, and has incrustated the whole cavern in such a manner that it appears as one solid rock.

PEAKS, a range of mountains in New Hampshire, extending from Strafford to the White Mountains. 2500 feet high.

PEAKS OF OTTER, in Bedford county, Virginia; thirty miles west by north of Lynchburg. Lat. 37° 33' N. They are summits of the Blue Ridge, and are considered the most elevated points of land in Virginia. The altitude of the eastern peak is 3104 feet; that of the western 2946. According to another statement, the elevation is 3955 feet. The summits are composed of granite.

PEAL, *n. s. & v. a.* Belg. *belvi*; Dan. *biel*. (The noise of bells.) A succession of loud noises; to assail with loud noise.

Ere to black Hecate's summons
The shard-born beetle with his drowsy hums
Hath rung night's yawning peal, there shall be done
A deed of dreadful note. *Shakespeare. Macbeth.*

The breach of faith cannot be so highly expressed, as in that it shall be the last peal to call the judgments of God upon men. *Bacon's Essays.*

They were saluted by the way, with a fair peal of artillery from the tower. *Hayward.*

I myself
Vanquished with a peal of words, O weakness!
Give up my fort of silence to a woman. *Milton.*

Nor was his ear less pealed
With noises loud and ruinous, than when Bellona

storms,
With all her battering engines, bent to rase
Some capital city. *Id. Paradise Lost.*

Let the pealing organ blow
To the full-voiced quire below,
In service high and anthems clear,
As may, with sweetness down mine ear,
Dissolve me into extasies,
And bring all heaven before mine eyes.

Milton.
From the Moor's camp the noise grows louder
still;

Peals of shouts that rend the heavens. *Dryden.*
Oh! for a peal of thunder that would make
Earth, sea, and air, and heaven and Cato tremble,
Addison.

The pealing organ, and the pausing choir;
And the last words that dust to dust conveyed.

Titchel.
Peal upon peal redoubling all around,
Shakes it again and faster to the ground:

Now flashing wide, now glancing as in play,
Swift beyond thought the lightnings dart away.

Cowper.

PEAR, *n. s.* Fr. *poire*; Lat. *pyrum*. A
PEARMAIN, } well known tree and fruit. See
PEAR'-TREE, } PYRUS. Of which the apple
pearmain is also a species.

They would whip me with their fine wits, till I were
as crest fallen as a dried pear. *Shakespeare.*

The pear-tree critics will have to borrow his name
of *tip*, fire. *Bacon.*

August shall bear the form of a young man, of a
choleric aspect, upon his arm a basket of pears, plums,
and apples. *Peucham.*

Pearmain is an excellent and well known fruit.

Mortimer.

The juicy pear
Lies in a soft profusion scattered round.

Thomson.

PEARCE (Dr. Zachary), bishop of Rochester, was the son of a distiller in High Holborn. He was born in 1690, and educated at Westminster, where he was distinguished by his merit, and elected one of the king's scholars. In 1710, when he was twenty years old, he was elected to Trinity College, Cambridge. During the first years of his residence at the university he wrote *Essays*, some of which are inserted in the *Guardian* and *Spectator*. In 1716 he published his edition of *Cicero de Oratore*, and dedicated it to lord chief justice Parker (afterwards earl of Macclesfield), to whom he was a stranger. This laid the foundation of his future fortune; for lord Parker recommended him to Dr. Bentley, master of Trinity, to be made one of the fellows. In 1717 Mr. Pearce was ordained, at the age of twenty-seven. In 1718 lord Parker was appointed chancellor, and invited Mr. Pearce to live with him as chaplain. In 1719 he was instituted rector of Stapleford Abbots, in Essex: in 1720 of St. Bartholomew, worth £400 per annum. In 1722 he was presented to St. Martin's in the Fields. In 1723 he married Miss Adams, the daughter of a distiller, with a considerable fortune; and in 1724 the degree of D. D. was conferred on him by archbishop Wake. The same year he dedicated to the earl of Macclesfield his edition of *Longinus* on the Sublime, with a new Latin version and notes. When the church of St. Martin's was rebuilt, Dr. Pearce preached a sermon at the consecration, which he printed, and accompanied with an *Essay* on the Origin and Progress of Temples, traced from the rude stones which were first used for altars to the noble structure of Solomon, which he considers as the first temple completely covered. Dr. Pearce was appointed dean of Winchester in 1739; and in 1744 he was elected prolocutor of the lower house of convocation for Canterbury. He was consecrated bishop of Bangor, February 12th, 1748. Upon the death of bishop Wilcocks he was promoted to the see of Rochester and deanery of Westminster in 1756. In 1768 he resigned the deanery; in 1773 he lost his lady; and, after some months of lingering decay, he died at Little Ealing, June 29th, 1774, aged eighty-five. This eminent prelate distinguished himself in every part of his life by the virtues proper to his station. His literary abilities, and application to sacred and philological learning,

appear by his works; the principal of which are, 1. A Letter to the clergy of the Church of England, on occasion of the Bishop of Rochester's commitment to the Tower; second edition, 1722. 2. Miracles of Jesus Vindicated, 1727 and 1728. 3. A Review of the Text of Milton, 1733. 4. Two Letters against Dr. Middleton, occasioned by the Doctor's Letter to Waterland, on the publication of his treatise, entitled *Scripture Vindicated*; third edition, 1752. And, 5, since his death, A Commentary with Notes on the Four Evangelists and the Acts of the Apostles, with a new translation of St. Paul's First Epistle to the Corinthians, with a paraphrase and notes, have been published, with his life prefixed, from original MSS. in 2 vols. 4to.

PEARCE (Nathaniel), a late African traveller, was born of respectable parents at East Acton, in Middlesex. At an early age he went to sea, and landed on the shore of the Red Sea; whence he found his way to Abyssinia, where he was much caressed. After residing there some years, he went to Cairo, with the intention of revisiting his native land. But having, at the latter end of May, 1820, taken charge of some antiquities for the British Museum, as well as for individuals, he proceeded to Alexandria, and was about to embark, when a bilious fever carried him off suddenly, on the 12th of August. He was buried the same evening in the Greek convent, his body being carried by six English sailors. He left all his manuscripts to his friend and patron Mr. Salt, our consul in Egypt.

PEARCH, in ichthyology. See PERCA. The perch affords good sport for the angler. The best time for their biting is when the spring is over, and before the heats of summer come on. At this time they are very greedy; and the angler, with good management, may take at one standing all that are in a hole, be they ever so many. The proper baits are minnows or young frogs; but the worm called the brandling, well scoured, is also excellent at all times of the year. When the perch bites, he should always have a great deal of time allowed him to swallow the bait. The perch will bite all day if the weather be cloudy; but the best time is from eight to ten A.M., and from three to six P.M. The perch is very abstemious in winter, and will seldom bite in this season: if he does at all, it is in the middle of the day; at which time indeed all fish bite best. If the bait be a minnow, which is the bait that affords most diversion to the angler, it must be fastened to the hook alive, by putting the hook through the upper lip or back-fin; it must be kept at about mid-water, and the float must be a quill and a cork, that the minnow alone may not be able to sink it. The line must be of silk, and strong; and the hook armed with a small and fine wire, that if a pike should take the bait, as is not unfrequently the case, he may be taken. The way to carry the minnows or small gudgeons alive for baits is this: a tin pot is to be provided, with holes in the lid, and filled with water; and, the fish being put in this, the water is to be changed once in a quarter of an hour by the holes, without taking off the lid at any time, except when the bait is to be taken out. A small casting net, made for

these little fish, should be taken out with the perch-tackle; and one or two casts of this will take baits enough for the day without any farther trouble. When the bait is a frog, the hook is to be fastened to the upper part of the leg. The best place for the fishing for perch is in the turn of the water near some gravelly scour. A place of this kind being pitched upon, it should be baited over-night, with lobworms chopped to pieces; and in the morning, on going to it, the depth is to be regularly plumbed, and then the hook is to be baited with the worm or other bait; and, as it drags along, the perch will soon seize upon it.

PEARL, *n. s.* Fr. *perle*; Span. *perla*. Supposed by Salmasius to come from Lat. *spherulæ*; but there is an Arab *para, loo loo* (jewel of the sea).

The kingdom of heaven is like unto a merchant-man seeking goodly pearls, who, when he had found one pearl of great price, sold all that he had and bought it. Matt. xiii. 45, 46.

Flowers purpled, blue and white,
Like sapphire, pearl, in rich embroidery
Buckled below fair knighthood's bending knee.

Shakspeare.

Dropping liquid pearl,
Before the cruel queen, the lady and the girl
Upon their tender knees begged mercy. Drayton.
Which when she heard, full pearly floods
I in her eyes might view. Id.

This (moderation) is the centre wherein all, both divine and moral philosophy meet; the rule of life; the governess of manners; the silken string, that runs through the pearl-chain of all virtues.

Bp. Hall.

The water nymphs
Held up their pearly wrists, and took her in,
Bearing her straight to aged Nereus' hall. Milton.

Some in their pearly shells at ease, attend
Moist nutriment. Id. *Paradise Lost*.
For what the day devours, the nightly dew
Shall to the morn in pearly drops renew. Dryden.

Another was invested with a pearly shell, having
the suture: finely displayed upon its surface.

Woodward.

A pearl julep was made of a distilled milk.

Wiseman.

Cataracts pearl coloured, and those of the colour of burnished iron, are esteemed proper to endure the needle. Sharp.

A PEARL, in natural history, is a hard, white, shining body, usually roundish, found in a testaceous fish resembling an oyster. See MYA. The fish in which these are usually produced is the East Indian pearl oyster. Besides this shell there are many others that are found to produce pearls; as the common oyster, the mussel, and several others, the pearls of which are often very good; but those of the true Indian berberi, or pearl oyster, are in general superior to all. The small or seed pearls, also called ounce pearls, from their being sold by the ounce and not by tale, are vastly the most numerous and common. We have Scotch pearls frequently as big as a little tare, some as big as a large pea, and some few of the size of a horse-bean; but these are usually of a bad shape, and of little value in proportion to their weight. Philip II. of Spain

had a pearl perfect in its shape and color, and of the size of a pigeon's egg. Their color ought to be a pure white; and that not a dead and lifeless but a clear and brilliant one; they must be perfectly free from any foulness, spot, or stain; and their surfaces must be naturally smooth and glossy; for their natural polish art is not able to improve. All pearls are formed of the matter of the shell, and consist of a number of coats spread with perfect regularity one over another, in the manner of the several coats of an onion, or like the several strata of the stones found in the bladders or stomachs of animals, only much thinner.

Very little is known of the natural history of the pearl fish. The general belief is that the mussel is constantly stationary in a state of repose, and cannot transfer itself from place to place. This is a vulgar prejudice, and one of those facts that are mistaken for want of sufficient pains or opportunity to make more critical observations. Others, finding the first opinion a false one, and that they are endowed with power of changing place like other animals, have, upon the same foundation, gone into the contrary extreme, so far as to attribute swiftness to them, a property surely inconsistent with their being fixed to rocks. Mr. Bruce says that the mussels found in the salt springs of Nubia likewise travel far from home, and are sometimes surprised, by the ceasing of the rains, at a greater distance from their beds than they have strength and moisture to carry them. From the shells a judgment may be formed whether they contain pearls. Those which have a thick calcareous crust on them, to which *serpulæ*, *tubuli marini*, *cristagalli*, *madrepores*, *millipores*, *spongie*, and other *zoophites*, adhere, commonly contain the best pearls; the smooth ones either none or very small ones.

The colors of pearls are different according to the shells in which they are found. There are three kinds of bivalve shells chiefly sought after by the pearl fishers. The first is a kind of mussel chiefly found in the north end of the Red Sea. It produces pearls of a fine shape and excellent lustre, but seldom of that very fine color which enhances their price. The second kind, called pinna, is broad and semicircular at the top, and sharp at the hinge, the outside rough and red, the inside lined with mother of pearl. It produces pearls having the reddish cast of the inner shell of the pinna called mother of pearl; which confirms the opinion of Reaumur, that the pearls are formed from the glutinous fluid which makes the first rudiments of the shell; and this kind of pearl is found to be more red as it is formed nearer the broad part of the shell, which is redder than the other end. The third sort of shell resembles the oyster, and produces pearls of extreme whiteness. The value of these commodities depends upon their size, regularity of form, whether round or not, weight, smoothness, color, and the different shades of that color. The pearl fishers say that, when the shell is smooth and perfect, they never expect to find any pearls, but always do so when it has begun to be deformed and distorted. Hence M. Reaumur supposes that, as the fish becomes older, the vessels containing the juice for forming the shell, and keep-

ing it in its vigor, grow weak and ruptured; and thence, from this juice accumulating in the fish, the pearl is formed, and the shell brought to decay.

He observes that pearls are formed like other stones in the animals; as those, e. gr. in the bladder, kidneys, &c., and that they are apparently the effects of a disease of the fish. In effect, they are all formed of a juice extravasated out of some broken vessels, and detained, and fixed among the membranes. To evince the possibility of this, M. Reaumur shows that the shells of sea-fish, as well as those of snails, &c., are wholly formed of a glutinous stony matter, oozing out of the body of the animal. Now it is no wonder that an animal which has vessels wherein circulates a sufficient quantity of stony juice to build, thicken, and extend a shell, should have enough to form stones also, in case the juice, destined for the growth of the shell, shall chance to overflow, and burst forth in any cavity of the body, or among the membranes.

To confirm this system, he observes, that the inner surface of the common pearl-mussel, found on the coasts of Provence, is of a pearl, or mother-of-pearl color, from one part of its extent, which he determines, to another; after which it becomes reddish: now there are pearls of two colors found in the shell; and the colors of the pearls are precisely the same with those of the shell; nay, more, each kind of colored pearl is found in the corresponding colored part of the shell; which shows that, in the same place wherein the transpiration of a certain juice had formed, and would have continued to form a coat or layer of shell of a certain color; the vessels which conveyed that juice being broken, there is formed a little mass or collection of the juice, which, hardening, becomes a pearl of the same color with the part of the shell to which it corresponds.

Add to this, that the silver, or pearl-colored part of the shell, is formed of strata, or layers, over one another, like an onion; and the reddish part of little cylindrical short fibres applied against one another. The pearls of the two colors have also this difference of texture; not but they are both composed of concentric couches; but those of the reddish pearls are much less sensible; and, besides, they have threads, which, like radii, proceed from their centre to their circumference. These circumstances seem effectually to determine the formation of pearls.

The extravasations above-mentioned may be caused by heterogeneous bodies, such as sand coming in with the food, which the animal covers with its glutinous matter, to prevent disagreeable friction, and which, as it is successively secreted, forms many regular lamellæ, in the manner of the coats of an onion, or like different strata of bezoars, only much thinner; this is probable, for if we cut through the centre of a pearl, we often find a foreign particle, which ought to be considered as the nucleus, or primary cause of its formation. The loose pearls may originally have been produced within the body, and on their increase may have separated and fallen into the cavity of the shell. Those compact ones, fixed to the shells, seem to be produced by similar ex-

travasation, occasioned by the friction of some roughness on the inside of the shell. These and the pearl-like nodes have a different aspect from the pearls, and are of a darker and bluer color. The art of forcing shell-fish to produce pearls was known, in the first centuries of the Christian era, to the inhabitants of the coasts of the Red Sea, as we are told by the philosopher Apollonius (Philostrat. in Vita Apollon. lib. iii. c. 57, edit. Olearii, p. 139), who thought that circumstance worthy of particular notice. The process employed by the Chinese at present, to cause a certain kind of mussels to form pearls, seems to confirm the account given by Philostratus. In the beginning of the summer, at the time when the mussels repair to the surface of the water and open their shells, five or six small beads, made of mother-of-pearl, and strung on a thread, are thrown into each of them. At the end of two years when the mussels are drawn up and opened, the beads are found covered with a pearly crust, in such a manner that they have a perfect resemblance to real pearls. The truth of this information cannot be doubted, though some experiments made in Bohemia for the same purpose were not attended with success. It has been confirmed by various persons, and it is very probable, that some operations and secrets, without which the process would prove fruitless even in China, may be unknown to the Europeans. Professor Fabricius says, that he saw in the possession of Sir Joseph Banks, in London, large chamsa, brought from China, in which there were several bits of iron wire, incrustated with a substance of a perfect pearly nature. These bits of wire, he said, had been sharp, and it appeared as if the mussels, to secure themselves against the points of the wire, had covered them with this substance, by which means they had been rendered blunt.

The celebrated Linné informed the king and council of Sweden, in the year 1761, that he had discovered an art by which mussels might be made to produce pearls, and he offered to disclose the method for the benefit of the kingdom. This however was not done, but he disposed of his secret to one Bagge, a merchant at Gottenburg, for the sum of 18,000 copper dollars, which make about 500 ducats.

The most complete account of the artificial formation of pearls with which we have met was furnished by a gentleman to the Edinburgh Philosophical Journal, and from which our limits will allow but a short extract.

‘Pearls, in general,’ says our author, ‘take the color of the shell in which they are formed, being nothing else than the substance of the shell disposed in concentric layers, and tending more or less to a spherical form. From the great number of small pearls which I have frequently collected from the small sea-mussel (*Mytilus edulis*) so common in the streets of London, I find that there is no part of the flesh of this animal in which pearls do not occur. The natural expenditure of the substance which forms the pearl is only for the purpose of producing the shell or testaceous covering of the shell-fish; but various causes producing wounds in the animal, or otherwise irritating it, will produce a secretion of the

shelly matter to defend the injured part; and however sharp or angular the offending substance may be, it by degrees assumes a round form, in proportion as it is covered by a greater number of coats. The assertion advanced by Linné, and repeated in some works, that the Chinese have a mode of producing by art real pearls in the living shell-fish, though in general little credited, seemed to me so feasible, that I was led to attempt a similar experiment, which I tried upon the large mussel of our ponds (*anodonta cygnea*), being the only convenient shell-fish which I could command in the central parts of England. I procured, therefore, the largest of these, from five to six inches long, from the duke of Marlborough's water of Blenheim; but, although the vigor of the animals promised me success, several of them died. I shall only relate what happened in the surviving ones.

I drilled several holes in the most convex part of these shells, and introduced brass wires of two-thirds of a line in diameter. These wires had a sharp point, and were fixed in the shell in the way of cramps; some were disposed in strait lines, and others in such artificial forms as to show plainly that the pearls so produced, if the experiment should succeed, were the work of design, and not the unmolested operation of nature. One of these which, I believe, is still preserved in the Anatomical School at Christ Church in Oxford is an indisputable proof of this, the points forming the initial letters of my name. I let them down in a wooden box, perforated with holes, and loaded with a weight, into the River Isis; and, on examining them a few months after, I found some of them dead, and, it is probable, they died very soon after the operation, as the brass-points remained perfectly naked. I returned the living ones into the water, and took them up at the expiration of eighteen months from the operation. I then killed the animal, in order to examine the shell, and I found, in one instance, the points of the wires fairly covered with a calcareous substance, rather coarser than the inside of the shell, which circumstance was probably owing to the more hasty deposition of the earthy matter, which, therefore, wanted the compactness and the pearly color of the inner layer of the shell. Instead of points, the wires were now terminated by a round head, and the fish having survived is a proof that it was sufficiently defended from the injury which it must at first have received. On examining other shells, I found the points of the wires, which projected at least two lines within the shell, covered only with a mucous substance, which, however, preserved a rounded form; so that these, also, resembled the heads of large pins.

These experiments I made many years ago, and, more lately, I commenced others of a similar nature, but better planned, introducing, in place of pointed wires, round beads of different materials, through holes in the shell. These beads were of glass, steel, &c., and, from their form, I supposed would produce less irritation, and afford a fairer surface for the adventitious earthy matter. What I here attempted by art is not unfrequently produced by nature herself. I have two scallop-shells (the flat shell), the inner

surface of which is very thick, and set with extremely minute points of the substance of the shell, which, it appears, the animal had, in this instance, also produced in its own defence in order to guard itself against the invasion of a species of boring molluscous animal, which had made its way through the outer layers of the shell, and was proceeding inwards, so as to oblige the animal to secure in many points its inner wall against the invader.

In the museum of the College of Surgeons are some artificial pearls of a very fine water, and nearly orbicular; their base is supported by a small process, which separates at the end into short diverging processes, which stand off at right angles to the central rib. On more minute examination, it appeared that these pearls were produced by there being introduced between the mantle of the animal (while yet alive) and the shell, a small piece of silver wire, bent into a peculiar form, that is to say, so as to form a right angle, with one arm ending in two diverging processes, so as to make the simple end always to keep its erect position. These wires must be introduced in the same manner as the semi-orbicular pieces of mother-of-pearl in the other method of forming artificial pearls, as there is no appearance of any external injury. The pearls are solid, and nearly orbicular, with a small pedicle, which is continued so as to entirely cover the wire.

In the British Museum there is, or was, a famous pink pearl, of a respectable size, and of an oval form: probably produced by one of the large West India conchs. In the waters in Scotland between Perth and Auchtermuchty the mussels afford green pearls: the blue pearls from Montrose are also radiated in their texture, though extremely dense, so that the radii are invisible to the naked eye.

That pearls are calcareous is inferred from Cleopatra's having been able to dissolve hers in vinegar, and by these means to gain a wager from her lover, as we are told by Pliny and Macrobius. She must, however, have employed stronger vinegar than that which we use for our tables, as the pearls, on account of their hardness and their natural enamel, cannot be easily dissolved by a weak acid. Cleopatra, perhaps, broke and pounded the pearls; and it is probable that she afterwards diluted the vinegar with water, that she might be able to drink it; though dissolved calx destroys acids and renders them imperceptible to the tongue. We are told that the dissipated Ciodius gave to each of his guests a pearl dissolved in vinegar to drink; 'ut expeiretur in gloria palati,' says Pliny, 'quid sapient margaritæ; atque ut mirè placuere, ne solus hoc sciret, singulos unione convivi absorbendos dedit.' Horace says the same. The entertainment we should imagine to have been more costly than agreeable. Caligula, also, 'margaritas pretiosissimas aceto liquefactas sorbebat.' That pearls are soluble in vinegar is remarked by Pausanias and Vitruvius.

The oriental pearls are the finest, on account of their largeness, color, and beauty, being of a silver white; whereas the occidental pearls seldom exceed the color of milk. In Europe pearls

are sold by the carat-weight, the carat containing four grains. In Asia the weights used for pearls are different states. The value of pearls increases as the square of their weight.

PEARL FISHERIES. There are many rivers, great and small, in Eastern Tartary, considerable for pearl fishery; but these pearls, though much esteemed by the Tartars, would be little valued by Europeans, on account of their defects in shape and color. The emperor Kang-hi had several chaplets or strings of these pearls, each containing 100, which were very large, and exactly matched. There are many rivulets in Livonia which produce pearls almost equal in size and clearness to the oriental ones. There are several fisheries both on the east and west coasts of Africa; the most considerable of which lie round some small islands near Sofala; but the people thus employed, instead of exposing the oysters to the warmth of the sun, which would induce them to open, lay them upon the embers; by which absurd method those pearls which they catch contract a dull kind of redness, which robs them of their natural lustre as well as of their value. In the sea of California also there are very rich pearl fisheries. The most esteemed pearls are those of Asia and the east coast of Africa. In Japan likewise there are found pearls of great price. Pearls are met with in all parts of the Red Sea, in the Indian Ocean, on the low part of the coast of Arabia Felix named Baharen, adjoining to the Persian Gulf. They are likewise found on the low coast about Gombroon east of the Persian Gulf; and many of the finest kind are met with on the coast of Ceylon. They are most plentiful in the Baharen, between the coast of Arabia Felix and Ormus, whence they are transported to Aleppo, then sent to Leghorn, and then circulated through Europe. In Scotland, especially to the northward, in all rivers running from lakes, there are found mussels that have pearls though seldom of large size.

In Ceylon the first business, previous to the commencement of the fishery, is to survey the different oyster banks, to ascertain the state of the oysters, and to make a report on the subject to government. If the quantity is found to be sufficient, and in a proper state of maturity, the particular banks to be fished that year are put up for sale to the highest bidder, and are usually purchased by a black merchant. Sometimes the government deems it more advantageous to fish the banks on its own account, and to dispose of the pearls afterwards to the merchants. When this plan is adopted, boats are hired for the season on account of government from different quarters, at a variable price, but usually from 500 to 800 pagodas for each boat. As it would not be expedient to fish the whole of the banks in one year, they are divided into three or four different portions, one portion of which is fished annually in succession. By this contrivance a sufficient interval is allowed for the oysters to attain their proper growth; and as the portion first used generally recovers its maturity by the time the last portion has been fished, the fishery becomes almost regularly annual. The oysters are supposed to attain their highest state of maturity in seven years; for, if they be left too

long, the pearls become so large and so disagreeable to the fishes, that they vomit and throw them out of the shell.

The fishing season commences in February, and ends about the beginning of April. The period allowed the merchant for fishing the banks is six weeks, or at the most two months; but the interruptions that occur prevent the fishing days from exceeding more than about thirty. In a bad season, the purchaser of the fishery is allowed a few days more as a favor. There are two seasons for pearl-fishing: the first is in March and April, and the last in August and September; and the more rain there falls in the year, the more plentiful are these fisheries. At the beginning of the season there are sometimes 250 barks on the banks: the larger barks have two divers; and the smaller, one. As soon as the barks arrive at the place where the fish lie, and have cast anchor, each diver binds a large stone under his body; which serves him as ballast, prevents his being driven away by the motion of the water, and enables him to walk more steadily under the waves. They also tie another very heavy stone to one foot, by which they are very speedily sent to the bottom of the sea; and as the oysters are usually firmly fastened to the rocks, they arm their hands with leather mittens, to prevent their being wounded in pulling them violently off; but this task some perform with an iron rake. Each diver carries down with him a large net in the manner of a sack, tied to his neck by a long cord, the other end of which is fastened to the side of the bark. This net is to hold the oysters gathered from the rock, and the cord is to pull up the diver when his bag is full, or when he wants air. In this equipage he sometimes precipitates himself sixty feet under water; and, as he has no time to lose, he no sooner arrives at the bottom, than he begins to run from side to side, tearing up all the oysters he meets with, and cramming them into his budget. The exertion undergone during this process is so violent, that, upon being brought into the boat, the divers discharge water from their mouths, ears, and nostrils, and frequently even blood. But this does not hinder them from going down again in their turn. They will often make from forty to fifty plunges in one day; and at each plunge bring up about 100 oysters. Some rub their bodies over with oil, and stuff their ears and noses to prevent the water from entering; while others use no precaution whatever. Although the usual time for remaining under water does not much exceed two minutes, yet there are instances known of divers who could remain four and even five minutes. The longest instance ever known was that of a diver who came from Anjanga in 1797, and who absolutely remained under water full six minutes.

The appearance of a single shark is sufficient to spread dismay among the whole body of divers; for as soon as one of them sees a shark he instantly gives the alarm to his companions, who as quickly communicate it to the other boats; a panic speedily seizes the whole, and they often return to the bay without fishing any more for that day. The sharks which create all this alarm sometimes turn out to be nothing

more than a sharp stone on which the divers happen to alight. As false alarms excited in this manner prove very injurious to the progress of the fishery, every means is employed to ascertain whether they are well or ill founded; and, if the latter be the case, the authors of them are punished. When they find themselves strained, they pull the rope to which the bag is fastened, and hold fast by it with both hands; when those in the bark, taking the signal, heave them up into the air, and unload them of their fish; which is sometimes 500 oysters, and sometimes not above fifty. Most of the divers need a short respite to recover breath; others jump in again instantly, continuing this violent exercise for several hours. On the shore they unload their barks, and lay their oysters in a vast number of little pits dug in the sand, four or five feet square, raising heaps of sand over them to the height of a man; and in this condition they are left till the rain, wind, and sun, have obliged them to open, which soon kills them: upon this the flesh rots and dries, and the pearls, thus disengaged, fall into the pit on their taking out the shells. After clearing the pits of the grosser filth, they sift the sand several times in order to find the pearl: but, whatever care they take, they always lose some. After cleaning and drying the pearls, they are passed through a kind of sieve, according to their sizes; the smallest are then sold by weight as seed-pearls, and the rest put up to auction, and sold to the highest bidder. The divers are paid differently according to their private agreement with the boat-owners. They are paid either in money, or with a proportion of the oysters caught, which they take the chance of opening on their own account; the latter is the method most commonly adopted. The agreement with the people who hire out the boats is conducted much in the same manner. They contract either to receive a certain sum for the use of their boats, or pay the chief farmer of the banks a certain sum for permission to fish on their own account. Some of those who pursue the latter plan are very successful and become rich; while others are great losers by the speculation. Oyster lotteries are carried on here to a great extent; they consist of purchasing a quantity of the oysters unopened, and running the chance of either finding or not finding pearls in them. The European officers and gentlemen, who attend here upon duty or through curiosity, are particularly fond of these lotteries, and very frequently make purchases of this sort.

PEARLS, METHOD OF MAKING ARTIFICIAL.

Attempts have been made to take out stains from pearls, and to render the foul opaque colored ones equal in lustre to the oriental. Abundance of processes are given for this purpose in books of secrets and travels; but they are very far from answering what is expected from them. Pearls may be cleaned indeed from any external foulnesses by washing and rubbing them with a little Venice soap and warm water, or with ground rice and salt, with starch and powder blue, plaster of Paris, coral, white vitriol and tartar, cutler-bone, pumice-stone, and other similar substances; but a stain that reaches deep into the substance of pearls is impossible to be taken

out. Nor can a number of small pearls be united into a mass similar to an entire natural one, as some pretend. There are, however, methods of making artificial pearls, in such a manner as to be with difficulty distinguished from the oriental. The ingredient used for this purpose was long kept a secret; but it is now discovered to be a fine silver-like substance found upon the under side of the scales of the blay or bleak-fish. The scales, taken off in the usual manner, are washed and rubbed with fresh parcels of fair water, and the several liquors suffered to settle: the water being then poured off, the pearly matter remains at the bottom, of the consistence of oil. A little of this is dropped into a hollow bead of bluish glass, and shaken about so as to line the internal surface; after which the cavity is filled up with wax, to give solidity and weight. Pearls made in this manner are distinguishable from the natural only by their having fewer blemishes.

PEARL-ASH, a kind of fixed alkaline salt, prepared chiefly in America, Germany, Russia, and Poland, by melting the salts out of the ashes of burnt wood; and, having reduced them again to dryness, evaporating the moisture, and calcining them for a considerable time in a furnace moderately hot. The goodness of pearl ashes must be distinguished by the uniform and white appearance of them: they are nevertheless subject to a common adulteration, not easy to be distinguished by the mere appearance, which is done by the addition of common salt. In order to find out this fraud, take a small quantity of the suspected salt: and after it has been softened by lying in the air, put it over the fire in a shovel: if it contains any common salt, a crackling and a kind of slight explosion will take place as the salt grows hot. Pearl-ashes are much used in the manufacture of glass, and require no preparation, except where very great transparency is required, as in the case of looking-glass, and the best kind of window-glass. For this purpose dissolve them in four times their weight of boiling water: when they are dissolved, let the solution be put into a clean tub, and suffered to remain there twenty-four hours or more. Let the clear part of the fluid be then decanted off from the sediment, and put back into the iron pot in which the solution was made; in this let the water be evaporated till the salts be left perfectly dry. Keep those that are not designed for immediate use in stone jars, well secured from moisture and air. Mr. Kirwan, who tried a course of experiments on the alkaline substances used in bleaching, &c., tells us, that in 100 parts of the Dantzic pearl-ash, the vegetable alkali amounted to somewhat above sixty-three. His pearl-ash he prepared by calcining a lie of vegetable ashes dried into a salt to whiteness. In this operation, he says, 'particular care should be taken that it should not melt, as the extractive matter would not be thoroughly consumed, and the alkali would form such a union with the earthy parts as could not easily be dissolved.'

PEARL, MOTHER OF, the shell, not of the pearl oyster, but of the *mytilus margaritiferus*. The most beautiful shell of this kind is that of the pinna: but it is too brittle to be employed in any large pieces of workmanship; whence that

kind named *dora* is most usually employed; and great quantities of this are daily brought from the Red Sea to Jerusalem.

PEARL ISLANDS, small islands of the gulf of Panama, where there was formerly a pearl fishery; the slaves belonging to Panama being employed to dive for pearls. This fishery is now of little importance; but the islands produce abundance of maize, plantains, fish, and game. Forty-five miles from the city of Panama.

PEARL ISLAND, a small island of the West Indies, in long. 79° 13' W., and lat. 14° 53' N.

PEARSON (Margaret Eglington), an ingenious lady, was the daughter of Mr. Samuel Paterson, so well known as a literary auctioneer, and an author of no little merit. She married an artist by the name of Pearson, and resided at Hampstead, where they carried on the art of painting on glass to a high degree of perfection. Mrs. Pearson excelled all her contemporaries in this line, and the two sets from the cartoons of Raphael, executed by her for the late marquis of Lansdowne, and Sir Gregory Page Turner, are full evidence of her extraordinary merit. She died February 14th 1823.

PEARSON (Edward), D.D., a learned and amiable divine, was born on the 25th of October, 1756, in the city of Norwich. He was never placed at any public school, but derived all early education from private instruction, and his own assiduity. In 1778 he was entered at Sidney Sussex College, Cambridge; and proceeded to the degree of B.A. 1782; and M.A., 1785. In 1786 he obtained the Norrisian prize, for an Essay on the Goodness of God, as manifested in the Mission of Jesus Christ, which was soon afterwards published, in conformity to the will of the founder. In 1792 he took the degree of B.D., and during a considerable period Mr. Pearson filled the situation of tutor to the college. In 1797 he was presented by his kind and esteemed friend, Dr. Elliston, the master, to the rectory of Rempstone, Nottinghamshire. In the same year he married Susan, the daughter of Richard Johnson, Esq., of Henrietta-Street, Covent Garden. In 1807 he was chosen, by the trustees, to preach the Warburtonian lectures at Lincoln's Inn, which he completed early in 1811. In 1808, on the death of Dr. Elliston, he was elected master of Sidney Sussex College, on which occasion he received, by royal mandate, the degree of D.D., and in the same year was appointed vice-chancellor. In 1810 he was elected by the university to the office of Christian advocate. The arduous duties connected with these various and important appointments had visibly affected his health, and whilst taking his customary walk in the garden of his parsonage, at Rempstone, he was suddenly attacked with an apoplectic seizure, from which he never recovered sufficiently to articulate; but expired on the 17th of August, 1811. The works of Dr. Pearson, besides that already mentioned, are the following: Discourses to Academic Youth; a Letter to a Member of the Senate of the University of Cambridge; and Remarks on the Theory of Morals. The Warburtonian Letters were also published, as well as several family prayers, written by him.

PEARSON (John), a learned English bishop, born at Snoring, in 1613. He was educated at Eton and Cambridge; entered into orders in 1639; and was made prebendary of Netherhaven in the church of Sarum. In 1640 he was appointed chaplain to the lord keeper Finch, and by him presented to Torrington in Suffolk. In 1650 he was made minister of St. Clement's, East Cheap, London. About 1660 he published in London *An Exposition of the Creed*, in folio; also *The Golden Remains of Mr. John Hales of Eton*; with a preface. In 1660 he was presented, by Juxon, bishop of London, to the rectory of St. Christopher's in that city; created D.D. at Cambridge; installed prebendary of Ely; archdeacon of Surry; and made master of Jesus College, Cambridge. March 25th 1661 he was appointed Margaret professor of divinity, and in 1662 one of the commissioners for the review of the liturgy. April 14th 1662 he was made master of Trinity College, Cambridge; and, in August, resigned his rectory of St. Christopher's and prebend of Sarum. In 1667 he was admitted F. R. S. In 1672 he published at Cambridge, in 4to., *Vindiciæ Epistolarum S. Ignatii*, in answer to M. Daillé; to which is subjoined, *Isaaci Vossii epistolæ duæ adversus Davidem Blondellum*. Pearson was appointed successor to bishop Wilkins in the see of Chester, February 9th 1672-3. In 1682 his *Annales Cyprianici, sive tredecim annorum, quibus S. Cyprian. inter Christianos versatus est, historia chronologica*, was published at Oxford, with Fell's edition of that Father's works. He died at Chester, July 16th 1686.

PEAR TREE. See **PYRUS**.

PEAS'ANT, *n. s.* } Fr. *païsan*; Ital. *pasano*;

PEAS'ANTRY. } Lat. *pagus*. A rustic; one whose business is rural labor: peasantry, a collective name for rustics; country people.

He holdeth himself a gentleman, and scorneth to work, which, he saith, is the life of a *peasant* or churl.

I had rather coin my heart, than wring
From the hard hands of *peasants* their vile trash.

Shakspeare.

How many then should cover, that stand bare!
How much low *peasantry* would then be gleaned
From the true seed of honour! how much honour
Pickt from the chaff!

Shakspeare. Merchant of Venice.

The poor *peasants* in the Alpine countries diversified themselves in the fields, and after their labour would be lively and brisk.

Brown's Travels.

The *peasantry* in France, under a much heavier pressure of want and poverty than the day-labourers of England of the reformed religion, understood it much better than those of a higher condition among us.

Locke.

'Tis difficult for us, who are bred up with the same infirmities about us with which we were born, to raise our thoughts and imaginations to those intellectual perfections that attended our nature in the time of innocence, as it is for a *peasant* bred up in the obscurities of a cottage to fancy in his mind the unseen splendours of a court.

South.

The citizens being two thousand men, with which they could make head against twelve thousand *peasants*.

Addison.

PEAS, in botany. See **PRISM**.

PEAT, *n. s.* Fr. *petit*. A fondling; a darling; a dear play thing; now commonly written *pet*.

A pretty *peat*! It is best but finger in the eye,
An she knew why.

Shakspeare. Taming of the Shrew.

A citizen and his wife

Both riding on one horse, upon the way
I overtook; the wench a pretty *peat*. *Donne.*

PEAT, *n. s.* Isl. *pyt*. A species of turf used for fuel.

Turf and *peat*, and cowsheards, are cheap fuels and last long.

Bacon's Natural History.

Carew, in his survey of Cornwall, mentions nuts found in *peat* earth two miles east of St. Michael's.

Woodward.

PEAT is a well-known inflammable substance, used in many parts of the world as fuel. There are two species, viz. 1. A yellowish brown or black *peat*, found in moorish grounds in Scotland, Holland, and Germany. When fresh it is of a viscid consistence, but hardens by exposure to the air. While soft, it is formed into oblong pieces for fuel, after the stony matters are separated. By distillation it yields water, acid, oil, and volatile alkali; the ashes containing a small proportion of fixed alkali; and being either white or red, according to the proportion of pyrites contained in the substance. The oil obtained from *peat* has a very pungent taste; and an empyreumatic smell, less fetid than that of animal substances, more so than that of mineral bitumens: it congeals in the cold into a pitchy mass, which liquefies in a small heat; it readily catches fire from a candle, but burns less vehemently than other oils, and immediately goes out upon removing the external flame; it dissolves almost totally in rectified spirit of wine into a dark brownish-red liquor. 2. The second species is found near Newbury in Berkshire. In the Philosophical Transactions we have the following accounting of this species:—*Peat* is a composition of the branches, twigs, leaves, and roots of trees, with grass, straw, plants, and weeds, which, having lain long in water, is formed into a mass so soft as to be cut through with a sharp spade. The color is a blackish brown, and it is used in many places for firing. There is a stratum of this *peat* on each side the Kennet, near Newbury in Berks, which is from a quarter to half a mile wide, and many miles long. The depth below the surface of the ground is from one foot to eight. Great numbers of entire trees are found lying irregularly in the true *peat*. They are chiefly oaks, alders, willows, and firs, and appear to have been torn up by the roots; many horses' heads, and bones of several kinds of deer, the horns of the antelope, the heads and tusks of boars, and the heads of beavers are also found in it. Some years ago an urn, of a light brown color, was found in the *peat*-pit in Speen Moor; near Newbury, at about ten feet from the river, and four feet below the level of the neighbouring ground. Just over the spot where the urn was found an artificial hill was raised about eight feet high; and, as this hill consisted both of *peat* and earth, it is evident that the *peat* was older than the urn. From the sides of the river, several semicircular ridges are drawn round the hill,

with trenches between them. The urn was broken to shivers by the peat-diggers who found it, so that it could not be critically examined. With peat also may be classed that substance called in England stone-turf; which hardens after its first exposure to the air, but afterwards crumbles down. The other common turf consists only of mould interwoven with the roots of vegetables; but when these roots are of the bulbous kind, or in large proportion, they form the worst kind of turf. 'Although it may appear incredible,' says M. Magellan, 'it is nevertheless a real fact, that, in England, peat turf is advantageously employed in Lancashire to smelt the iron ore of that county. Mr. Wilkinson, brother-in-law to Dr. Priestley, makes use of peat turf in his large smelting furnaces. I have seen in the possession of Mr. S. More, secretary to the Society of Arts, a kind of black tallow, extracted by the said Mr. Wilkinson from peat turf. It was very soft, and nearly of the same consistence with butter. It burnt very rapidly, with a smoaky flame, in the fire; but the smell was very disagreeable, like that of peat.' The great cause of the differences of peat most likely arises from the different mineral admixtures. Some sorts of peat yield, in burning, a very disagreeable smell, which extends to a great distance; whilst others are inoffensive. Some burn into gray or white, and others into red ferruginous ashes. The ashes yield, on elixation, a small quantity of alkaline salt, with sometimes one, and sometimes another salt of the neutral kind. The smoke of peats does not preserve or harden flesh like that of wood; and the soot into which it condenses is more disposed to liquefy in moist weather.

PEAT ASHES, properly burnt for a manure, are very useful both on corn and grass land; but the substance from which they should be got is an under stratum of the peat, where the fibres and roots of the earth, &c., are well decayed. Indeed the very best are procured from the lowest stratum of all. This will yield a large quantity of very strong ashes, in color (when first burnt) like vermilion, and in taste very salt and pungent. Great care and caution should be used in burning these ashes, and also in preserving them afterwards. The method of burning them is much the same as burning charcoal. The peat must be collected into a large heap, and covered so as not to flame out, but suffered to consume slowly, till the whole substance is burnt to an ash. The ashes thus burnt are held in most esteem; but the peat-ashes burnt in common firing, are in many places used for the same purposes. Peat ashes are excellent in sweetening sour meadow-land, destroying rushes, and other bad kinds of grass. They burn great quantities of peat-ashes in some parts of Berkshire, and Lancashire, and esteem them one of the best dressings for their spring crops. The sulphureous and saline particles, with which the ashes abound, have a most happy effect in promoting vegetation; and, if used with discretion, the increase procured by them is truly wonderful. All ashes are of a hot, fiery, caustic nature; they must, therefore, be used with caution. With respect to peat-ashes, almost the only danger proceeds from laying them on in too great quantities at improper seasons.

On wheat crops these ashes are of the greatest service, but they must be laid on with the utmost discretion. Were they to be spread in any quantity before winter, after the sowing the corn, they would make the wheat too rank, and do more harm than good; were the spreading this manure, on the contrary, deferred till spring, the corn could not possibly during the winter season be benefited by it. The beginning of November, before the hard frosts set in, seems to be the proper season for this purpose; and it is necessary to sow on every acre of heavy clayey wheat-land, about eight Winchester bushels of these ashes; on lighter warmer lands in wheat, four will be sufficient for this season. The winter dressing is thought by practical farmers to be of great service; trifling as the quantity may seem, it warms the root of the plant, brings it moderately forward, and preserves its verdure. About the end of February, or the beginning of March, on heavy lands in wheat, another dressing of ashes, by sowing of them on every acre eight bushels more will do much good; on light lands, in the second dressing, six bushels may be allowed. These ashes laid on in the spring are of the greatest service, without any probability of danger; if rain falls a few days after the dressing is laid on it is washed in, and has a happy effect on the succeeding crop, co-operating with the manure that was laid on in November; if, on the contrary, dry weather for a long continuance succeeds, the first winter dressing has its full effect, and the quantity laid on in the spring is in fact so small, that there is very little probability of its burning or hurting the crop. This excellent manure is also of great use in the turnip husbandry, particularly as it much contributes to preserve the young crop from being devoured by the fly. But one of the principal advantages derived from these ashes is the very great service they are of to every kind of artificial pasture. Saintfoin receives great benefit from this manure, and so does clover, rye-grass, and trefoil, provided it is laid on with discretion: the proper season is about February. The quantity must be regulated by the nature of the crop and soil; but it ought scarcely in any instance to exceed thirty Winchester bushels. Clover, with the help of this manure, grows with great luxuriance, insomuch that there have often been two large crops of hay from the same field in a year, and good autumn seed afterwards. They have an excellent effect on tares or vetches: to peas they seem to be hurtful. The effects of this manure will be visible at least three years; nor does it leave the land in an impoverished state, when its virtues are exhausted and spent. Peat-ashes are not, however, so certain a manure for barley and oats as for winter corn; for, as these are quick growers, and occupy the land but a few months, this warm manure is often apt to push them forward too fast, and make them run too much to coarse straw, yielding only a lean immature grain. Oats, however, are not so apt to be damaged by it as barley. Peat-ashes approach, in their effects on the several crops on which they are laid, to coal soot; but two-thirds of the quantity that is used of soot will be sufficient of the ashes, as they are in a much stronger

degree impregnated with a vegetative power; and they are besides in most places easier procured in quantities, and at a cheaper rate.

PEBBLE, *n. s.* } Sax. *pæbol*, *pæbol*-*ana*,
PEBBLESTONE. } as Mr. Thomson suggests
PEBBLED, *adj.* } from Goth. *boll*. A hard,
PEBBLY. } small, and generally round
stone, found among flints, in a homogeneous mass, though sometimes of many colors. Particularly, any small stone: pebbled and pebbly, abounding in pebbles.

Through the midst of it ran a sweet brook, which did both hold the eye open with her azure streams, and yet seek to close the eye with the purling noise it made upon the *pebble-stones* it ran over.

Sidney.

The bishop and the duke of Glo'ster's men,
Forbidden late to carry any weapon,
Have filled their pockets full of *pebble-stones*.

Shakespeare.

Suddenly a file of boys delivered such a shower of *pebbles* loose shot, that I was fain to draw mine honour in.

Id.

You may see *pebbles* gathered together, and a crust of cement between them, as hard as the *pebbles*.

Bacon.

Collecting toys,
As children gath'ring *pebbles* on the shore. *Milton.*
Winds murmured through the leaves your long delay;

And fountains o'er the *pebbles* chid your stay.

Dryden.

Another body, that hath only the resemblance of an ordinary *pebble*, shall yield a metallic and valuable matter.

Woodward.

The crystal, in form of nodules, is found lodged in the earthy strata left in a train by the water departing at the conclusion of the deluge: this sort, called by the lapidaries *pebbles-crystal*, is in shape irregular.

Id.

This bank fair spreading in a *pebbled* shore.

Thomson.

Strowed bibulous above I see the sands,
The *pebbly* gravel next.

Id.

Once more, O Trent! along thy *pebbly* marge,
A pensive invalid, reduced and pale,
From the close sick-room newly let at large,
Woos to his wan-worn cheek the pleasant gale.

Kirk White.

PEBBLES, in mineralogy, are a genus of fossils, distinguished from the flints by their having a variety of colors. These are defined to be stones composed of a crystalline matter debased by earths of various kinds in the same species, and then subject to veins, clouds, and other variegations, usually formed by incrustation round a central nucleus, but sometimes the effect of a simple concretion; and veined like the agates, by the disposition which the motion of the fluid they were formed in gave their differently-colored substances. The variety of pebbles is so great that a hasty describer would be apt to make almost as many species as he saw specimens. A careful examination will teach us, however, to distinguish them into a certain number of essentially different species, to which all the rest may be referred as accidental varieties. In all the strata of pebbles there are constantly found some which are broken, and of which the pieces lie very near one another; but, as bodies of such hardness could not be broken without some considerable violence, their present situation seems

to indicate that they have suffered that great violence in or near the places where they now lie. Several of these broken pebbles have their edges and corners so sharp and even that it seems evident they never can have been tossed about or removed since the fracture was made; and others have their sides and corners so rounded, blunted, and worn away, that they seem to have been roughly moved and rolled about among other hard bodies, either with great violence, or for a very long continuance; since such hard bodies could not have been reduced to the condition in which we now see them without long friction. See MINERALOGY and GEOLOGY.

PECCABLE, *adj.* } All from Lat. *pecco*.
PECCABIL'ITY, *n. s.* } Liable to sin or error:
PECCADIL'LO, } peccability, state of being
PECCANCY, } so liable: peccadillo
PECCANT, *adj.* } (Span. *peccadillo*)
a small or slight fault or crime: peccancy, faultiness; criminality; bad quality: peccant, faulty; guilty; deficient; ill-disposed.

Where the common *peccability* of mankind is urged to induce commiseration towards the offenders: if this be of force in sin, where the concurrence of the will renders the person more inexcusable, it will surely hold much more in bare error which is purely involuntary.

Decay of Piety.

The wicked are only in the body of the church, as peccant humours, and excrements, and hair, and putrefaction.

Jer. Taylor.

From them I will not hide

My judgments, how with mankind I proceed;
As how with peccant angels late they saw.

Milton.

He means those little vices which we call follies and the defects of the human understanding, or at most the *peccadillos* of life, rather than the tragical vices to which men are hurried by their unruly passions.

Dryden.

With laxatives preserve your body sound,

And purge the peccant humours that abound. *Id.*
That such a peccant creature should disapprove and repent of every violation of the rules of just and honest, this right reason could not but infer.

South's Sermons.

Nor is the party cited bound to appear, if the citation be peccant in form or matter.

Ayliffe.

'Tis low ebb with his accusers, when such *peccadillos* as these are put in to swell the charge.

Atterbury.

Such as have the bile peccant or de ciant are relieved by bitters, which are a sort of subsidiary gall.

Arbutnot.

Apply refrigerants without any preceding evacuation, because the disease took its original merely from the dissection of the part, and not from the peccancy of the humours.

Wiseman.

PECHANTRE (Nicholas), a French poet, the son of a surgeon at Toulouse, where he was born in 1638. He wrote poems in Latin and French, for which he was thrice crowned by the academy des Jeux Floraux. He also wrote a tragedy entitled Geta, which was acted at Paris in 1687, with great applause. He died in 1708.

PECK, *n. s.* From *pocca*, or perhaps from *pat*, a vessel. Skinner. Rather from Arm. *pech* (a fourth part) from *pechwar*, four. A measure containing the fourth part of a bushel.

Her finger was so small, the ring
Would not stay on which they did bring;

It was too wide a *peck* ;
 It looked the great collar just
 About our young colt's neck. *Suckling.*
 Burn our vessels, like a new
 Sealed *peck* or bushel, for being true. *Hudibras.*
 To every hill of ashes, some put a *peck* of un-
 slacked lime, which they cover with the ashes till
 rain slacks the lime and then they spread them.
Mortimer's Husbandry.

He drove about his turnips in a cart ;
 And from the same machine sold *pecks* of pease.
King.

PECK, *v. a.* } Fr. *becquer* ; Belg. *bicken* ;
 PECKER, *n. s.* } Span. *pecan* ; Port. *bicar* ; or
 from Sax. *becca*, a BEAK, which see. To strike
 with the beak ; to pick up food with the beak ;
 strike with any pointed instrument ; pick up
 slanderous tales.

With a pick axe of iron about sixteen inches long,
 sharpened at the one end to *peck*, and flat-headed at
 the other to drive little iron wedges to cleave rocks.
Carew's Survey of Cornwall.

She was his only joy, and he her pride,
 She, when he walked, went *pecking* by his side.
Dryden.

The titmouse and the *peckers* hungry brood,
 And Progne with her bosom stained in blood. *Id.*
 They will make head against a common enemy,
 whereas mankind lie *pecking* at one another till they
 are torn to pieces. *L'Estrange.*

Two country factions, both inveterate enemies of
 our church, which they are perpetually *pecking* and
 striking at with the same malice. *South.*

Can any thing be more surprising than to con-
 sider Cicero observing, with a religious attention, after
 what manner the chickens *pecked* the grains of corn
 thrown them ? *Addison.*

The worstiest people are most injured by slander,
 as we usually find that to be the best fruit which the
 birds have been *pecking* at. *Swift.*

The worm, more expensively fed,
 The pride of the garden devours ;
 And birds *peck* the seed from the bed,
 Still less to be spared than the flowers.
Cowper.

PECK (Francis), was born at Stamford, in
 Lincolnshire, May 4th, 1692, and educated at
 Cambridge where he took the degrees of B. A. and
 M. A. He was appointed rector of Godeby,
 near Melton in Leicestershire. He was the
 author of many works, viz.:—1. A Poem, en-
 titled Sighs on the Death of Queen Anne ;
 1714. 2. TO ΥΠΟΘΕΣΙΣ, or an Exercise on
 the Creation, and a Hymn to the Creator of the
 World ; 1716, 8vo. 3. In 1721, being then
 curate of King's Cliff in Northamptonshire, he
 issued proposals for printing the History and
 Antiquities of his native town, which was pub-
 lished in 1727, in folio, under the title of Aca-
 demia tertia Anglicana ; or the Antiquarian
 Annals of Stamford in Lincoln, Rutland, and
 Northampton shires ; containing the History of
 the university, monasteries, guilds, churches,
 chapels, hospitals, and schools there, &c., in-
 scribed to John duke of Rutland. 4. The His-
 tory of the Stamford Bull-running. 5. In 1732
 he published vol. I. of Desiderata Curiosa ; or
 a Collection of divers scarce and curious
 Pieces, relating chiefly to matters of English
 History ; consisting of choice tracts, memoirs,
 letters, &c., transcribed, many of them from the
 originals, and the rest from divers ancient MS.

copies, or the MS. collations of sundry famous
 antiquaries, &c. This volume was dedicated to
 lord William Manners, and was followed, in
 1735, by a second volume, dedicated to Dr.
 Reynolds, bishop of Lincoln. 6. A Complete
 Catalogue of all the Discourses written both for
 and against popery in the time of king James
 II., containing an account of 457 books and
 pamphlets, &c., 4to. 1735. 7. Nineteen Letters
 of the Rev. Henry Hammond, D. D., to Mr.
 Peter Stainnough and Dr. Nathaniel Angelo, on
 curious subjects, &c., 1739. 8. Memoirs of the
 Life and Actions of Oliver Cromwell, as de-
 livered in three panegyrics of him written in
 Latin, supposed by Mr. John Milton ; with an
 English version ; illustrated with a large histori-
 cal preface and notes, &c., 1740, 4to. 9. New
 Memoirs of the Life and Poetical Works of Mr.
 John Milton.

PECK'LED, *adj.* Corrupted from speckled.
 Spotted : varied with spots.

Some are *peckled*, some greenish.

Walton's Angler.

PECKWELL (Henry), D. D., a divine of the
 church of England, born in 1747. He was
 chaplain to the marchioness of Lothian, and
 rector of Bloxham in Lincolnshire ; but attached
 himself to the Calvinistic Methodists, among
 whom he was very popular. He patronised the
 Humane Society, and the society for the relief
 of persons imprisoned for small debts. He
 studied physic, and founded a society for visit-
 ing the sick at their own houses ; but fell a
 sacrifice to his philanthropy, by wounding him-
 self in the hand, while opening the body of a
 patient who had died of a putrid fever. The
 part mortified, and he died August 18th 1787.
 He printed several sermons.

PECORA, in zoology, the fifth order of the
 class mammalia, in the Linnæan system. See
 ZOOLOGY.

PECQUET (Anthony), a celebrated French
 philosopher, born in 1704. He was appointed
 grand master of the water-works and forests of
 Rouen. His writings on philosophy, politics,
 and morals, are numerous. His Spirit of Law
 and of Political Maxims, and his Thoughts on
 Man, are most esteemed. He died in 1762.

PECQUET (John), a celebrated physician born
 in Dieppe. He was physician in ordinary to
 the celebrated Fouquet, whom he entertained
 with experiments in natural philosophy. He
 acquired immortal honor by the discovery of a
 lacteal vein, which conveys the chyle to the
 heart ; and which from him is called le Reser-
 voir de Pecquet. This discovery was a fresh
 proof of the truth of the circulation of the
 blood ; though it was opposed by many of the
 learned, particularly the famous Riolaui, who
 wrote a treatise against the author of it, with
 this title : Adversus Pecquetum et Pecquetianos.
 Pecquet's works are, 1. Experimenta nova
 Anatomica ; Paris, 1654. 2. A Dissertation,
 De Thoracis Lacteis ; Amsterdam, 1661. He
 was a man of a lively and active genius. He
 recommended, as a remedy for many diseases,
 the use of brandy. The use of this remedy,
 however, contributed to shorten his own days.
 He died at Paris, in 1674.

PECTEN, the scallop, a genus of shell-fish. The characters are these:—the animal is a *tethys*; the shell bivalve and unequal; the hinge toothless, having a small ovated hollow. This shell fish is one of the spinners, having the power of spinning threads like the mussels; but they are much shorter and coarser than those of that fish. The use of the threads which are spun upon the scallop is to fix the creature to any solid body near its shell. All these proceed, as in the mussel, from one common tree. It is an evident proof that the fish has a power of fixing itself at pleasure to any solid body by means of these threads, that after storms the scallops are often found tossed upon rocks where there were none the day before; and yet these are fixed by their threads, as well as those which had remained long in their place. They form their threads in the same manner with the mussel; only their organ for spinning is shorter, and has a wider hollow, whence the threads are necessarily thicker and shorter. The pecten, such as the sole pecten, the ducal mantle pecten, the knotted, and others, seem to be in general inhabitants of the Indian Seas; some of them frequent those of Africa and the South Seas. The name pecten seems to have been given to these animals from the longitudinal striæ with which their surface is covered, which resemble somewhat the teeth of a comb; and hence also the Greek name *κτεν*. By the general character of this shell, it evidently includes cockles as well as scallops, which are the pectens without ears, and having less flat or elated shells. Cockles are called by all authors by a name which is only a diminutive of pecten, pectunculus. The having ears indeed is the common mark of distinction between the pectens and the cockles, which last usually have none. The pectens by some are esteemed as delicious a food as the oyster. They differ very materially in a variety of circumstances. The pectens sail on the surface of the water; and, if attacked by a foe, they let down the membrane which nature has provided them for a sail, and drop to the bottom. ‘Behold,’ says Barbut, ‘the splendor of the pectines, which rival the glowing colors of the papilionaceous tribe, as numerous as they are beautiful, flirting from place to place, and may well be called the papiliones of the ocean. What superior qualities does not the pecten enjoy above the ostrea edulis, which, constantly confined to its native bed, seems wholly destined to afford food for other creatures, not having any means of defence but its shelly castle, which is often attacked and stormed by its numerous enemies?’ The grand mark of distinction between the pectens and oyster seems to be the locomotive faculty. It was long supposed that the oyster possessed no power of motion, that it always remained in the place in which nature or accident had placed it, and that its life differed little from that of vegetables. Experience, however, has taught us to reject these premature conclusions. See **OSTREA**. The most remarkable species is, the

P. maximus, or great scallop, being the same with what Barbut calls the ducal-mantle pecten. It has fourteen rays, very prominent and broad,

and striated both above and below. They are rugged and imbricated with scales. They grow to a large size, and are found in beds by themselves; are dredged up and barrelled for sale. The ancients say that they have a power of removing themselves from place to place by vast springs or leaps. The fish was used both by the Greeks and Latins as a food. When dressed with pepper and cummin, it was taken medicinally. The scallop was formerly worn by pilgrims on their hat, or the cape of their coat, as a mark that they had crossed the sea in their way to the Holy Land, or some distant object of devotion.

PECTINAL, *n. s.* } Lat. *pecten*. A comb:
PECTINATED, *adj.* } comb-like: state of be-
PECTINATION, *n. s.* } ing pectinated.

There are other fishes whose eyes regard the heavens, as plain and cartilaginous fishes, as *pectinals*, or such as have their bones made laterally like a comb.

Browne.

The complication or *pectination* of the fingers was an hieroglyphic of impediment.

Id.

To sit cross-legged or with our fingers *pectinated*, is accounted bad.

Id. Vulgar Errors.

PECTIS, in botany, a genus of the polygamia superflua order, and syngenesia class of plants; natural order forty-ninth, composite.

PECTORAL, *adj. & n. s.* Lat. *pectoralis*. Belonging to the breast: forming the name of a breast-plate.

Being troubled with a cough, *pectorals* were prescribed, and he was thereby relieved. *Wiseman.*

PECTORAL, a sacerdotal vestment, worn by the Jewish high-priest. The Jews call it *Hoshchen*, the Greeks *λογιον*, the Latins *rationale* and *pectorale*, and in our version of the Bible it is called breast-plate. It was about a span square.

PECTORALE, a breast-plate of thin brass, about twelve fingers square, worn by the poorer soldiers in the Roman army, who were rated under 1000 drachmæ. See **LORICA**.

PECULATION, or **PECULATE**, in civil law, the crime of embezzling the public money, by a person intrusted with the receipt, management, or custody thereof.

PECU'LIAR, *adj. & n. s.* } Fr. *pecule*; Lat.
PECULIAR'ITY, *n. s.* } *peculiaris*, *pecu-*
PECULIARLY. } *lium*. Appropriate; belonging exclusively to one; particular; sole: as a noun substantive the exclusive property of one; something exempt from ordinary jurisdiction: peculiarity is, particularity; that which is found only in one; oddity; peculiarly follows the senses of peculiar as an adjective.

Some *peculiar*s exempt from the jurisdiction of the bishops.

Lesley.

The only sacred hymns they are that Christianity hath *peculiar* unto itself, the other being songs too of praise and of thanksgiving, but songs wherewith as we serve God, so the Jews likewise.

Hooker.

Thus Tivy boasts this beast *peculiarly* her own.

Drayton.

Certain *peculiar*s there are, some appertaining to the dignities of the cathedral church at Exon.

Carew.

One *peculiar* nation to select

From all the rest, of whom to be invoked.

Milne.

By tincture on reflection, they augment
Their small *peculiar*. *Id. Paradise Lost.*

I neither fear, nor will provoke the war;
My fate is Juno's most *peculiar* care. *Dryden.*

When his danger increased, he then thought fit to
pray *peculiarly* for him. *Fell.*

Space and duration being ideas that have some-
thing very abstruse and *peculiar* in their nature, the
comparing them one with another may be of use for
their illustration. *Locke.*

Revenge is so absolutely the *peculiar* of Heaven,
that no consideration whatever can empower even the
best men to assume the execution of it. *South.*

That is *peculiarly* the effect of the sun's variation.
Woodward.

I agree with Sir William Temple, that the word
humour is *peculiar* to our English tongue; but not
that the thing itself is *peculiar* to the English, be-
cause the contrary may be found in many Spanish,
Italian, and French productions. *Swift.*

If an author possessed any distinguishing marks of
style, or *peculiarity* of thinking, there would remain
in his least successful writings some few tokens
whereby to discover him. *Id.*

Every man hath something *peculiar* in the turn or
cast of his mind, which distinguishes him as much as
the particular constitution of his body. *Mason.*

PECULIAR, in the canon law, signifies a parti-
cular parish or church that has jurisdiction within
itself for granting probates of wills and adminis-
trations, exempt from the ordinary or bishop's
court. The king's chapel is a royal *peculiar*,
exempt from all spiritual jurisdiction, and re-
served to the visitation and immediate govern-
ment of the king himself. There is likewise the
archbishop's *peculiar*: for it is an ancient privi-
lege of the see of Canterbury, that wherever any
manors or advowsons belong to it, they forthwith
become exempt from the ordinary, and are re-
puted *peculiars*: there are fifty-seven such *pecu-
liars* in the see of Canterbury. Besides these,
there are some *peculiars* belonging to deans,
chapters, and prebendaries, which are only ex-
empted from the jurisdiction of the archdeacon:
these are derived from the bishop, who may visit
them, and to whom there lies an appeal.

PECULIARS, COURT OF, is a branch of, and an-
nexed to, the court of arches. It has a jurisdic-
tion over all those parishes dispersed through
the province of Canterbury in the midst of other
dioceses, which are exempt from the ordinary's
jurisdiction, and subject to the metropolitan only.
All ecclesiastical causes, arising within these *pecu-
liar* or exempt jurisdictions, are originally
cognizable by this court: from which an appeal
lay formerly to the pope, but now, by the statute
25 Henry VIII. c. 19, to the king in chancery.

PECULIUM, in law, the stock or estate which
a person, in the power of another, whether male
or female, either as his or her slave, may acquire
by his industry. Roman slaves frequently
amassed considerable sums in this way. The
word properly signifies the advanced price which
a slave could get for his master's cattle, &c.,
above the price fixed upon them by his master,
which was the slave's own property.

PECUNIA, in mythology, a goddess among
the Romans, whom they invoked with a view of
procuring money in abundance. But as the
specie was coined of different metals, especially

of gold, silver, and brass, and as one divinity had
too much occupation in taking care of the dif-
ferent coinages, a particular one was appointed
for each. Three goddesses represented upon
some medals of the emperor Commodus and
his successors, with a pair of scales, the cornu-
copia, and a heap of money by them, prove that
there was at least that number, and the antiqua-
ries agree that they presided over the coinage of
three metals, æs, aurum, argentum.

PECUNIARY, *adj.* Fr. *pecuniaire*; Lat. *pecu-
narius*, *pecunia*. Relating to money; consist-
ing of money.

Pain of infamy is a severer punishment upon in-
genious natures than a *pecuniary* mulct. *Bacon.*

Their impostures delude not only unto *pecuniary*
defraudations, but the irreparable deceit of death.
Browne.

The injured person might take a *pecuniary* mulct
by way of atonement. *Browne.*

PED, *n. s.* From *pad*, a road. Commonly
pronounced *pad*. A small pack-saddle, basket,
or hamper.

A pannel and wanty, packsaddle and *ped*.

A haak is a wicker *ped*, wherein they use to carry
fish. *Tusser.*
Spenser.

PEDAGOGUE, *n. s. & v. a.* } Lat. *peda-*
PEDAGOGY, *adj.* } *gogus*; Gr.
παιδαγωγος, *παις*, a boy, and *αγω*, to teach.
One who teaches boys; a school master: a pe-
dant: to pedagogue is to teach with supercil-
ious airs: pedagogy, early or first discipline.

Few *pedagogues* but curse the barren chair,
Like him who hanged himself for mere despair
And poverty. *Dryden.*

In time the reason of men ripening to such a pitch,
as to be above the *pedagogy* of Moses's rod and the
discipline of types, God thought fit to display the
substance without the shadow. *South's Sermons.*

This may confine their younger styles,
Whom Dryden *pedagogues* at Will's:
But never could be meant to tie,
Authentic wits, like you and I. *Prior.*

The old sabbath appertained to the *pedagogy* and
rudiments of the law: and therefore when the great
master came and fulfilled all that was prefigured by
it, it then ceased. *White.*

A **PEDAGOGUE**, or **PÆDAGOGUE**, is an instruc-
tor in grammar and other arts. The word is
formed from the Greek *παιδων αγωγος*, *puerorum*
ductor, i. e. a leader of boys. M. Fleury ob-
serves, that the Greeks gave this name to slaves
appointed to attend their children, lead them,
and teach them to walk, &c. The Romans gave
the same denomination to the slaves who were
intrusted with the care and instruction of their
children.

PED'ALS, *n. s.* Lat. *pedalis*; Fr. *pedales*.
The large pipes of an organ: so called because
played upon and stopt with the foot.

The organ which Dr. Kemp exhibited in his lec-
tures at the Russel Institution, for which Mr. Loesch-
man has a patent (see the Philosophical Magazine,
vol. xxxvii. p. 326, and vol. xxxviii. p. 47), has
twenty-four sounds, and as many pipes in each oc-
tave. By the help of six *pedals*, and the twelve usual
finger-keys, the performer is enabled to execute the
mean-tone system correctly, or any other, in the
twenty-four usual keys. *Dr. A. Rea.*

PED'ANT, *n. s.*
 PEDAN'TICAL, *adj.*
 PEDANT'ICALLY, *adv.*
 PED'ANTRY, *n. s.*

Fr. *pedant*; of Gr. *παιδευω*. A school-master; a man vain of his learning: the derivatives all follow this sense.

A *pedant* treads in a rule; while one hand scans verses, and the other holds his sceptre: he dares not think a thought that the nominative case governs not the verb. To be brief he is a heteroclitite; for he wants the plural number, having only the single quality of words.

Sir T. Overbury.

A *pedant* that keeps a school i' the church.

Shakspeare.

Mr. Cheeche had eloquence in the Latin and Greek tongues; but for other sufficiencies *pedantic* enough.

Hayward.

Horace has enticed me into this *pedantry* of quotation.

Cowley.

The *pedant* can hear nothing but in favour of the conceits he is amorous of.

Glanville.

'Tis a practice that savours much of *pedantry*, a reserve of puerility we have not shaken off from school.

Browne.

The last main given to learning has been by the scorn of *pedantry*, which the shallow, the superficial, and the sufficient among scholars first drew upon themselves, and very justly, by pretending to more than they had.

Temple.

The boy who scarce has paid his entrance down To his proud *pedant*, or declined a noun.

Dryden.

The earl of Roscommon has excellently rendered it; too faithfully is, indeed, *pedantically*, 'tis a faith like that which proceeds from superstition.

Id.

The preface has so much of the *pedant*, and so little of the conversation of men in it, that I shall pass it over.

Addison.

When we see any thing in an old satyrast that looks forced and *pedantic*, we ought to consider how it appeared in the time the poet writ.

Id.

Make us believe it if you can: it is in Latin, if I may be allowed the *pedantry* of a quotation, non persuadebis, etiamsi persdaseris.

Id.

The obscurity is brought over them by ignorance and age, made yet more obscure by their *pedantic* elucidators.

Felton.

We now believe the Copernioan system; yet we shall still use the popular terms of sun-rise and sun-set, and not introduce a new *pedantic* description of them from the motion of the earth.

Bentley.

In learning let a nymph delight,

The *pedant* gets a mistress by't.

Swift.

A spirit of contradiction is so *pedantic* and hateful, that a man should watch against every instance of it.

Watts.

To say a person writes a good style, is originally as *pedantic* an expression, as to say he plays a good fiddle.

Shenstone.

Pursuit of fame with *pedants* fills our schools.

And into coxcombs burnishes our fools.

Young.

PEDANT is used for a rough, unpolished, man of letters, who makes an impertinent use of the sciences, and abounds in unseasonable criticisms and observations. Madam Dacier defines a *pedant*, a person who has more reading than good sense. Malebranche describes a *pedant* as a man full of false erudition, who makes a parade of his knowledge, and is ever quoting some Greek or Latin author, or hunting back to a remote etymology. Lord Chesterfield justly and successfully ridiculed this species of *pedantry*, but set the example, which has been since very much followed, of what may be styled modern *pedantry*, by constantly interlarding his letters and

other works with French, Spanish, and Italian quotations. St. Evremont says, that to paint the folly of a *pedant*, we must represent him as turning all conversation to some one science or subject he is best acquainted with. There are *pedants* of all conditions, and all robes. Wicquefort says, an ambassador always attentive to formalities and decourms is nothing else but a political *pedant*.

PEDARIANS, in Roman antiquity, a name anciently given to such of the Roman senators as by merely walking over to their party signified their opinion with their feet. According to Dr. Middleton, though the magistrates of Rome had a right to a place and vote in the senate both during their office and after it, and before they were put upon the roll by the censors, yet they had not probably a right to speak or debate there on any question, at least in the earlier ages of the republic. For this seems to have been the original distinction between them and the ancient senators, as it is plainly intimated in the formule of the consular edict sent abroad to summon the senate, which was addressed to all senators, and to all those who had a right to vote in the senate. From this distinction, those who had only a right to vote were called in ridicule *pedarian*; because they signified their votes by their feet, not their tongues, and, upon every division of the senate, went over to the side of those whose opinion they approved. It was in allusion to this old custom, which seems to have been wholly dropt in the latter ages of the republic, that the mute part of the senate continued still to be called by the name *pedarians*, as Cicero informs us, who, in giving an account to Atticus of a certain debate and decree of the senate upon it, says that it was made with the eager and general concurrence of the *pedarians*, though against the authority of all the consulars.

PEDDABALABARAM, or GREAT BALIPOOR, a large trading town and fortress of Mysore, south of India. The latter, although entirely built of mud, is strong, as the shot buries itself in the rampart. The town is fortified likewise by a wall and hedge. On the dissolution of the Hindoo kingdom of Bijanagur, the polygar, or chief of Balipoor, kept possession of this fortress, and it was not taken from his successor until about the middle of the last century, by the nizam. It was then conferred as a jagire on a Mogul named Abdool Russoul, from whose family it was taken in 1761, by Hyder Aly; since which period it has been subject to the ruler of Mysore. Long. 77° 47' E., lat. 13° 17' N. Fourteen miles to the eastward is Little Balipoor, the capital of a small district.

PEDESTAL, *n. s.* Fr. *pedestal*. The lower member of a pillar; the basis of a statue.

The poet bawls,

And shakes the statues and the *pedestals*.

Dryden.

In the centre of it was a grim idol; the forepart of the *pedestal* was curiously embossed with a triumph.

Addison.

So stiff, so mute! some statue would you swear Stept from its *pedestal* to take the air.

Pope.

View him at Paris in his last career, Surrounding throughs the demigod reverse,

Exalted on his *pedestal* of pride,
And fumed with frankincense on every side,
He begs their flattery with his latest breath,
And smothered in't at last is praised to death.

Cowper.

PEDESTRIAN, *adj.* & *n. s.* ? Lat. *pedes-*
PEDESTRIOSUS, *adj.* } *tris.* On foot;
or going on foot: this is the meaning of both ad-
jectives: a pedestrian is a traveller on foot.

Men conceive they never lie down, and enjoy not
the position of rest, ordained unto all *pedestrian* ani-
mals.

Browne.

Statue, *Pedestrian* [is], a statue standing on foot;
as that of king Charles II. in the Royal Exchange;
and that of king James II. in the Privy Gardens.

Dr. A. Ross.

PEDIACI, or **PEDIÆANS**, in Grecian anti-
quity. The city of Athens was anciently divided
into three different parts; one on the descent of
a hill; another on the sea shore; and a third in
a plain between the other two. The inhabitants
of the middle region were called *Πεδίαι*, *Pedi-*
æans; or, as Aristotle will have it, *Pediaci*;
formed from *πῆδιον*, plain or flat: those of the
hill, *Diacrians*; and those of the shore, *Paraliens*.
These quarters usually composed so many dif-
ferent factions. Pisistratus made use of the
Pediæans against the *Diacrians*. In the time of
Solon, when a form of government was to be
chosen, the *Diacrians* chose the democratic; the
Pediæans demanded an aristocracy, and the *Pa-*
raliens a mixed government.

PEDICLE, *n. s.* Fr. *pedicule*; Lat. *pedis*.
The footstalk, that by which a leaf or fruit is
fixed to the tree.

The cause of the holding green, is the close and
compact substance of their leaves and *pedicles*.

Bacon.

PEDICULARIS, in botany, rattle coxcomb,
or louse-wort, a genus of the angiospermia order
and didynamia class of plants; natural order
fortieth, personate. Species thirty-four, all
European plants.

PEDICULUS, the louse, in entomology, a
genus of insects belonging to the order of aptera.
It has six feet, two eyes, and a sort of sting in
the mouth: the feelers are as long as the thorax;
and the belly is depressed and sublobated.
It is an oviparous animal, not peculiar to
man, but infesting other animals, as quadru-
peds and birds, and even fishes, insects, and
vegetables; but these are of peculiar species on
each animal, according to the particular nature
of each. Nay, even insects are infested with
vermin which feed on and torment them. Several
kinds of beetles are subject to lice; but parti-
cularly that kind called the lousy beetle. The
lice on this are very numerous, and cannot be
shaken off. The earwig is often infested with
lice, just at the setting on of its head; these are
white, and shining like mites, but they are much
smaller; they are round-backed, flat-bellied, and
have long legs, particularly the foremost pair.
Snails of all kinds, but especially the large naked
sorts, are very subject to lice; which are conti-
nually seen running about them and devouring
them. Numbers of little red lice, with a very small
head, and in shape resembling a tortoise, are
often seen about the legs of spiders, and they

never leave the animal while he lives; but, if he
is killed, they almost instantly forsake him. A
species of whitish lice are found on humble
bees; they are also found upon ants; and fishes
are not less subject to them than other animals.
Kircher tells us that he found lice also on flies.
The louse which infests the human body makes
a very curious appearance through a microscope.
It has naturally three divisions, the head, the
breast, and the tail part. In the head appear
two fine black eyes, with a horn that has five
joints, and is surrounded with hairs standing
before each eye; and from the end of the nose
or snout there is a pointed projecting part,
which serves as a sheath or case to a piercer or
sucker, which the creature thrusts into the skin
to draw out the blood and humors which are its
destined food; for it has no mouth. This piercer
or sucker is said to be 700 times smaller than a
hair, and is contained in another case within the
first, and can be drawn in or thrust out at plea-
sure. The breast is very beautifully marked in
the middle; the skin is transparent, and full of
little pits; and from the under part of it proceed
six legs, each having five joints, and their skin
all the way resembling shagreen, except at the
end, where it is smoother. Each leg is termi-
nated by two claws, which are hooked, and are
of an unequal length and size. These it uses as
we would a thumb and middle finger; and
there are hairs between these claws as well as all
over the legs. On the back part of the tail there
may be discovered some ring-like divisions, and
a sort of marks which look like the strokes of a
rod on the human skin; the belly looks like
shagreen, and towards the lower end it is very
clear, and full of pits; at the extremity of the
tail there are two semicircular parts all covered
with hairs, which serve to conceal the anus.
When the louse moves its legs, the motion of
the muscles, which all unite in an oblong dark
spot in the middle of the breast, may be distin-
guished perfectly, and so may the motion of the
muscles of the head when it moves its horns.
We may likewise see the various ramifications
of the veins and arteries out. But the most sur-
prising of all is the peristaltic motion of the en-
trails, which is continued all the way from the
stomach down to the anus. If one of these
creatures, when hungry, be placed on the back
of the hand, it will thrust its sucker into the
skin, and the blood which it sucks may be seen
passing in a fine stream to the fore part of the
head; where, falling into a roundish cavity, it
passes again in a fine stream to another circular
receptacle in the middle of the head; thence it
runs through a small vessel to the breast, and
then to a vessel which reaches to the hinder part
of the body, where, in a curve, it turns again a
little upward; in the breast and entrails the
blood is moved without intermission, with a
great force; especially in the latter, where it oc-
casions such a contraction as is very surprising.
In the upper part the propelled blood stands
still, and seems to undergo a separation, some
of it becoming clear and waterish, while other
black particles are pushed forward to the anus.
If a louse be placed on its back, two bloody
darkish spots appear; the larger in the middle

of the body; the lesser towards the tail; the motions of which are followed by the pulsation of the dark bloody spot, in or over which the white bladder seems to lie. This motion of the systole and diastole is best seen when the creature begins to grow weak; and on pricking the white bladder, which seems to be the heart, the creature instantly dies. The lower dark spot is supposed to be the excrement in the gut.

Lice have been supposed to be hermaphrodites: but this is erroneous; for Mr. Lieuwenhoeck observed, that the males have stings in their tails, which the females have not. And he supposes the smarting pain which those creatures sometimes give, to be owing to their stinging when made uneasy by pressure or otherwise. He says that he felt little or no pain from their suckers, though six of them were feeding on his hand at once. To know the true history and manner of breeding of these creatures, Mr. Lieuwenhoeck put two female lice into a black stocking, which he wore night and day. He found, on examination, that in six days one of them had laid above fifty eggs; and, upon dissecting it, he found as many yet remaining in the ovary: whence he concludes that in twelve days it would have laid 100 eggs. These eggs naturally hatch in six days, and would then probably have produced fifty males, and as many females; and these females, coming to their full growth in eighteen days, might each of them be supposed after twelve days more to lay 100 eggs; which eggs, in six days more, might produce a young brood of 5000: so that in eight weeks, one louse may see 5000 of its own descendants. Signior Rhedi, who has more attentively observed these animals than any other author, has given several engravings of the different species of lice found on different animals. Men, he observes, are subject to two kinds; the common and the crab-louse. He observes, also, that the size of the lice is not at all proportioned to that of the animal which they infest; since the starling has them as large as the swan. Some kinds of constitutions are more apt to breed lice than others; and in some places of different degrees of heat, they are certain to be destroyed upon people who in other climates are over-run with them. Cleanliness is doubtless the grand secret, by which to keep clear from them, especially in wearing woollen clothes. Monkeys and some Hottentots, we are told, eat lice; and are thence denominated phthirophages. On the coast of the Red Sea it is reported that there is a nation, of small stature and of a black color, who use locusts for the greatest part of their food, prepared only with salt. On such food these men live till forty, and then die of a pedicular or lousy disease. It is also a fact that the negroes on the west coast of Africa take great delight in making their women clear their bodies of lice, and the latter devour them with greediness. In ancient medicine lice were esteemed aperient, febrifuge, and proper for curing a pale complexion. The natural repugnance to those ugly creatures (says Lemery) perhaps contributed more to banish the fever than the remedy itself. In the jaundice five or six were swallowed in a soft egg. In the suppression of urine, which

happens frequently to children at their birth, a living louse is introduced into the urethra, which, by the tickling it occasions in the canal, forces the sphincter to relax, and permits the urine to flow. A bug produces the same effect. Farriers have also a custom (says M. Bourgeois) of introducing one or two lice into the urethra of horses when they are seized with a retention of urine, a disease pretty common among them. But, according to the Continuation of the Materia Medica, to use the pedicular medicine with the greatest advantage, one would need to be in Africa, where those insects are carefully sought after and swallowed as a delicious morsel. The great distinction between those which infest mankind is into the head and body louse. The former is hard and high colored, and the latter less compact and more of ashen color. If it were possible to give a reason why some families of the same species stick to the head and others to the clothes, &c., it would also, in all probability, be possible to understand the nature of many contagious diseases.

PED'IGREE, *n. s.* Per and degré. Skinner. Rather from Fr. *piéd*; Lat. *pes*, a stem or root and degré. Genealogy; lineage; account of descent.

I am no herald to enquire of men's *pedigrees*; it sufficeth me if I know their virtues. *Sidney.*

You tell a *pedigree*

Of threescore and two years, a silly time.

Shakespeare.

Alterations of surnames, which in former ages have been very common, have obscured the truth of our *pedigrees*, that it will be no little labour to deduce many of them. *Comden.*

To the old heroes hence was given

A *pedigree* which reached to heaven. *Waller.*

The Jews preserved the *pedigrees* of their several tribes with a more scrupulous exactness than any other nation. *Atterbury.*

The sportive wind blows wide

Their fluttering rags, and shows a tawny skin

The vellum of the *pedigree* they claim. *Cowper.*

And he would gaze upon his store,

And o'er his *pedigree* would pore,

Until by some confusion led,

Which almost looked like want of head,

He thought their merits were his own. *Byron.*

PEDILUVIUM, bathing of the feet. The uses of warm bathing in general, and of the pediluvium in particular, are so little understood, that they are often preposterously used, and sometimes as injudiciously abstained from. Warm bathing is of no service where there is an irresoluble obstruction, though, by its taking off from a spasm in general, it may seem to give a moment's ease; nor does it draw from the distant parts, but often hurts by pushing against matter that will not yield with a stronger impetus of circulation than the stretched and diseased vessel can bear: so that, where there is any suspicion of scirrhus, warm bathing of any sort should never be used. On the other hand, where obstructions are not of long standing, and the impacted matter is not obstinate, warm baths may be of great use to resolve them quickly. In recent colds, with slight humoral peripneumonies, they are frequently an immediate cure. This they effect by increasing the force of the

circulation, opening the skin, and driving freely through the lungs that lentor which stagnated or moved slowly in them. As thus conducing to the resolution of obstructions, they may be considered as short and safe fevers; and in using them we imitate nature, which by a fever often carries off an obstructing cause of a chronic ailment. Borelli, Boerhaave, and Hoffman, are all of opinion, that the warm pediluvium acts by driving a large quantity of blood into the parts immersed. But arguments must give way to fact: the experiments related in the Medical Essays seem to prove to a demonstration, that the warm pediluvium acts by rarifying the blood. A warm pediluvium, when rightly tempered, may be used as a safe cordial, by which circulation can be roused, or a gentle fever raised; with this advantage over the cordials and sudorifics, that the effect of them may be taken off at pleasure. See BATHING.

PEDIR, a town on the west coast of Sumatra. The principal trade of this place is in pepper, betel nut, gold dust, canes, rattans, bees'-wax, camphor, and benzoin. The soil is fertile, and well watered with rivulets; though the low lands next the sea are bogs, which produce only reeds, and bamboo canes, the soil is in general fertile. The animals found are horses of a small breed, oxen, buffaloes, goats, and hog deer. Wild animals abound in the woods and mountains; there are also alligators, guanas, porcupines, serpents, and other venomous animals, together with abundance of poultry.

PEDLER, *n. s.* } A petty dealer. 'A
PEDLERY, } contraction produced by
PEDDLING. } frequent use,' says Dr. Johnson. Minshew more probably from French *pedier aller*, to go on foot. One who travels the country with small wares: pedlery, the wares of a pedler: peddling, his habit of dealing.

All as a poor *pedler* he did wend,
Bearing a trusse of trifles at his back;
As belles and babies and glasses in his packe.

Spenser.

If you did but hear the *pedler* at the door, you would never dance again after a tabor and a pipe.

Shakespeare.

He is wit's *pedler*, and retails his wares
At wakes, and wassails, meetings, markets, fairs.

Id.

So slight a pleasure I may part with, and find no miss; this *peddling* profit I may resign, and 'twill be no breach in my estate.

Decay of Piety.

Had sly Ulysses at the sack
Of Troy brought thee his *pedler's* pack.

Cleaveland.

Atlas was so exceeding strong,
He bore the skies upon his back,
Just as a *pedler* does his pack.

Swift.

The sufferings of those of my rank are trifles in comparison of what all those are who travel with fish, poultry, *pedlery* ware, to sell.

Id.

PEDLER, or **PEDLAR**, a travelling foot trader. See **HAWKER**. In Britain (and formerly in France) pedlars are despised; but it is otherwise in other countries. In Spanish America the business has been so profitable that it is thought by no means dishonorable; and there have been gentlemen in Old Spain, who, when their circumstances were declining, sent their

sons to the Indies to retrieve their fortunes in this way. In Poland, where there are few or no manufactures, almost all the merchandise is carried on by pedlars, who are said some time since to have been generally Scotsmen, and who, in the reign of Charles II., amounted to no fewer than 50,000.

PEDOMETER, or **PODOMETER**, from Greek *πες*, pes, foot, and *μετρον*, measure, a mechanical instrument, in form of a watch, consisting of various wheels with teeth, catching in one another, all disposed in the same plane; which by means of a chain or string fastened to a man's foot, or to the wheel of a chariot, advance a notch each step, or each revolution of the wheel; so that the number being marked on the edge of each wheel, one may number the paces, or measure exactly the distance from one place to another. There are some of them which mark the time on a dial-plate, and are in every respect much like a watch, and are accordingly worn in the pocket like a watch.

PEEBLES, a royal burgh and county town of the shire in Scotland to which it gives its name. It is situate on a fine plain on the north bank of the Tweed, over which there is a bridge of five arches, and is wholly surrounded with high hills. It is twenty-one miles south of Edinburgh. The town is well built, and is divided into the Old and New Town by the Eddlestone-Water. In the Old Town are the ruins of two ancient churches. The New consists chiefly of one street, which is broad and spacious, and the houses are neat and tolerably well built. At the west end stands the church, on a small eminence, where formerly the castle stood, and beside it is the county-jail. Besides these it has apartments for the sheriffs' and town-courts, and a hall where the business of the county is transacted; together with an elegant inn and assembly-rooms. Peebles has an excellent grammar-school, and another for English, arithmetic, &c. It manufactures stockings, and a great deal of weaving is carried on here. Here is also an extensive brewery, famous for its excellent ale. The town is governed by a council of eighteen persons, of which a provost and two bailies make a part. It joins with Lanark, Linlithgow, and Selkirk, in sending a member to parliament. It has a weekly market on Tuesday, and eight annual fairs, viz. second Tuesday in January, first Tuesday in March, second Wednesday in May, first Tuesday in July, Tuesday before August 24th, first Tuesday in September, 17th of October, and first Tuesday before November 12th.

PEEBLES, a small river in the above parish, which runs through the north part of the town into the Tweed, called also Eddlestone Water.

PEEBLESHIRE, or **TWEEDDALE**, a county of Scotland, bounded on the east and south-east by the shires of Berwick and Selkirk, on the south by Dumfries, on the west by Lanark, and on the north by Mid-Lothian, being about thirty-six miles in length, and about ten in breadth. It contains one royal borough, Peebles; and is divided into sixteen parochial districts. It is a hilly country, watered by the rivers Tweed, Yarrow, and Leithen, and several smaller streams; on the banks of which the soil is fertile, and adapted to every kind of husbandry; but the

greater portion is in pasturage, and the hills are covered with innumerable flocks of sheep, famous for the excellence of their wool. All the rivers and waters contain salmon and trout. Being an agreeable country, it is adorned with numerous seats of the nobility and gentry, and contains some esteemed mineral springs. It abounds with coal and lime-stone, and iron and lead ores are found in many of the parishes.

PEEK, in the sea-language, a word used in various senses. The anchor is said to be a-peek, when the ship being about to weigh comes over her anchor in such a manner that the cable hangs perpendicularly between the hause and the anchor. To heave a-peek is to bring the peek so that the anchor may hang a-peek. A ship is said to ride a-peek, when, lying with her main and fore yards hoisted up, one end of her yards is brought down to the shrouds, and the other raised up on end; which is chiefly done when she lies in rivers, lest other ships falling foul of the yards should break them. Riding a broad peek denotes much the same, excepting that the yards are only raised to half the height. Peek is also used for a room in the hold, extending from the bitts forwards to the stern: in this room men of war keep their powder, and merchantmen their victuals.

PEEL, *n. s. & v. a.* } *Fr. pelure, peler*; Lat. *PEEL'ER.* } *pellis*. Skin or rind; to strip off the skin or rind: a peeler is one who performs this operation; and, metaphorically, a robber or plunderer.

Yet otes with her sucking a *peeler* is found,
Both ill to the maister and worse to some ground.
Tusser.

The skilful shepherd *peeled* me certain wands,
And stuck them up before the fulsome ewes.
Shakspeare.

Who once just and temperate conquered well,
But governed ill the nations under yoke,
Peeling their provinces, exhausted all
But lust and rapine. *Milton's Paradise Regained.*
Lord-like at ease, with arbitrary power,
To *peel* the chiefs, the people to devour;
These, traitor, are thy talents. *Dryden.*
As 'tis a *peeler* of land, sow it upon lands that are rank.
Mortimer.

PEEL, in geography, a small island, on the west coast of the Isle of Man. It is naturally strong, but was rendered much more so by Thomas earl of Derby, who encompassed it with a wall, towers, and other fortifications; so that in these days it was impregnable.

PEELE (formerly Holm), a small town in the Isle of Man, situate on the west side of the island, twelve miles west of Douglas. It is a straggling place on the sea-shore; the harbour is neglected, the pier destroyed, and the trade of the town has recently much declined; but it has a very spacious and commodious bay. The church is dedicated to St. Peter; but here are the remains of two other churches, one dedicated to St. Patrick, and the other called St. Germain's.

The castle and the cathedral of St. Germain stand on Peele-Island, encircled by the sea. Near the ruins of St. Patrick's church, are the armoury, the episcopal palace, and the lord's mansion. The channel which divides this island from the main land, is very deep at high water,

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but at low water it is fordable, and was formerly joined to the main land by a strong quay. The walls of the castle enclose an area of about two acres.

PEELE (Francis), a dramatic writer, who flourished in the reign of queen Elizabeth. He was born in Devonshire; studied at Oxford in 1573; and took his degree of M. A. in 1579. He was a good pastoral poet, and his plays were acted, says Wood, with great applause.

PEEP, *v. n. & n. s.* } Dr. Johnson has cu-
PEEP'ER, *n. s.* } riously encumbered the
PEEP'HOLE, } etymology of this word
PEEP'ING-HOLE. } with learning. 'It has no etymology,' he says, 'except that of Skinner, who derives it from Dut. *ophessen*, to lift up; and of Casaubon, who derives it from *ὀφειννῆς*, a spy: perhaps it may come from Lat. *pip*, *pipio*, to cry as young birds: when the chickens first broke the shell and cried, they were said to begin to pip or peep; and the word that expressed the act of crying was, by mistake, applied to the act of appearing that was at the same time: this is offered till something better may be found.' But Minshew finds a Teut. *pipen*, to peer or look up; and old Fr. *pipper*, Ital. *pipire*, of the same signification. To look up; look slyly; make a first appearance; pry: peep is, first appearance; sly or prying look: peeper, applied particularly to young chickens breaking the shell; and, b. Addison, to the unfledged young ladies of his day: peep-hole and peeping-hole, a hole through which one may peep unobserved.

Them that have familiar spirits, and wizards that
peep and that mutter. *Isaiah viii. 19.*

A fool will *peep* in at the door. *Eccles. xxi. 23.*

She, her gay painted plumes disordered,
Seeing at last herself from danger rid,
Peeps forth, and soon renews her native pride.

Spenser.

Who is the same which at my window *peeps*. *Id.*

Your youth
And the true blood, which *peeps* forth fairly through
it,
Do plainly give you out an unstained shepherd.

Shakspeare.

I can see his pride

Peep through each part of him. *Id.*

Come, thick night!

That my keen knife see not the wound it makes;
Nor heaven *peep* through the blanket of the dark,
To cry hold! *Id. Macbeth.*

The timorous maiden-blossoms on each bough
Peeps forth from their first blushes; so that now
A thousand ruddy hopes smiled in each bud,
And flattered every greedy eye that stood. *Crashaw.*

The trembling leaves through which he played,
Dappling the walk with light and shade,
Like lattice-windows, give the spy
Room but to *peep* with half an eye. *Cloveland.*

With words not hers, and more than human sound,
She makes the obedient ghosts *peep* trembling through
the ground. *Roscommon.*

Fair as the face of nature did appear,
When flowers first *peeped*, and trees did blossoms
bear,

And winter had not yet deformed the inverted year.
Dryden

All doors are shut, no servant *peeps* abroad,
While others outward went on quick dispatch. *Id.*

3 A

The daring flames *peep* in, and saw from far
The awful beauties of the sacred quire;
But since it was prophaned by civil war,
Heaven thought it fit to have it purged by fire. *Id.*
The fox spied him through a *peepinghole* he had
found out to see what news. *L'Estrange.*

A *peeper* works with her hands, eyes, and fan;
one of which is continually in motion, while she
thinks she is not actually the admiration of some
ogler in the congregation. *Spectator.*

O, my muse, just distance keep;
Thou art a maid, and must not *peep*. *Prior.*

By the *peepholes* in his crest,
Is it not virtually confest,
That there his eyes took distant aim? *Id.*
Printing and letters had just *peeped* abroad in the
world; and the restorers of learning wrote very
eagerly against one another. *Atterbury.*
Those remote and vast bodies were formed not
merely to be *peep*t at through an optic glass.
Bentley's Sermons.

Most souls but *peep* out once an age,
Dull sullen prisoners in the body's cage. *Pope.*
Would not one think, the almanack-maker was
crept out of his grave to take't other *peep* at the stars?
Swift.

In vain his little children *peeping* out
Into the mingling storm, demand their sire.
Thomson.

Dishes I chuse, though little, yet genteel;
Snails the first course, and *peepers* crown the meal.
Bramst.

Though but the very white end of the sprout *peep*
out in the outward part of the couch, break it open,
you will find the sprout of a greater largeness.
Mortimer's Husbandry.

PEER, *v. n.* A contraction of APPEAR. To
come first into sight; PEEP, which see.

Now for a clod-like hare in form they *peer*,
Now bolt and cudgel squirrels leap do move,
Now the ambitious lark with mirror clear
They catch, while he, fool! to himself makes love. *Sidney.*

As the sun breaks through the darkest clouds,
So honour *peereth* in the meanest habit. *Shakspeare.*

Yet many of your horsemen *peer*,
And gallop o'er the field. *Id. Henry V.*

Even through the hollow eyes of death
I spy life *peering*. *Shakspeare.*

See how his gorget *peers* above his gown,
To tell the people in what danger he was. *Ben Jonson.*

Hell itself will pass away,
And leave her dolorous mansion to the *peering* day.
Milton.

And, when some curious rare idea *peer'd*
Upon his mind, he dipped his hasty pen,
And by the glimmering lamp, or moon light-beam,
That through his lattice *peeped*, wrote fondly down
What seem'd in truth imperishable song. *Pollak.*

PEER, *n. s.* } Fr. *pair*; of Lat. *par*.
PEER'AGE, } Equal; of the same rank;
PEER'ESS, } companion: hence a noble,
PEER'LESS, *adj.* as equal in the highest de-
gree: peeress is the female of peer: peerage, the
dignity of a peer, or body, of peers: peerless,
unequall'd.

He all his *peers* in beauty did surpass. *Spenser.*
His *peers* upon this evidence

Have found him guilty of high treason. *Shakspeare.*

I see thee compass with thy kingdom's *peers*,
That speak my salutation in their minds:
Hail, king of Scotland! *Id. Macbeth.*

King Henry's *peers* and chief nobility
Destroyed themselves, and lost the realm of France.
Shakspeare.

Her *peerless* feature, joined with her birth,
Approves her fit for none but for a king. *Id.*

Amongst a man's *peers*, a man shall be sure of
familiarity: and therefore it is good a little to keep
state. *Bacon.*

Oh! what is man, great maker of mankind!
That thou to him so great respect do'st bear!
That thou adorn'st him with so bright a mind,
Mak'st him a king, and ev'n an angel's *peer*. *Davies.*

All these did wise Ulysses lead, in counsel *peer* to
Jove. *Chapman.*

If you did move to night,
In the dances, with what spright
Of your *peers* you were beheld,
That at every motion swelled. *Ben Jonson.*

Hesperus, that led
The starry host, rode brightest; till the moon,
Rising in cloudy majesty, at length,
Apparent queen, unveiled her *peerless* light.
Milton.

In song he never had his *peer*,
From sweet Cecilia down to chanticleer. *Dryden.*

Who bear the bows were knights in Arthur's reign,
Twelve they, and twelve the *peers* of Charlemagne.
Id.

Be just in all you say, and all you do;
Whatever be your birth, you're sure to be
A *peer* of the first magnitude to me. *Id.*
Not only the penal laws are in force against pa-
pists, and their number is contemptible, but also the
peerage and commons are excluded from parliament.
Id.

Her dress, her shape, her matchless grace,
Were all observed, as well as heav'nly face;
With such a *peerless* majesty she stands,
As in that day she took the crown. *Id.*

Statesman and patriot ply alike the stocks;
Peeress and butler share alike the box. *Pope.*

His friendships he to few confined;
No fools of rank or mongrel breed,
Who fain would pass for lords indeed;
Where titles give no right or power,
And *peerage* is a withered flower. *Swift.*

PEER was anciently applied to the vassals or
tenants of the same lord, who were called peers,
because they were all equal in condition, and
obliged to serve and attend him in his courts,
and peers in fiefs, because they all held fiefs
of the same lord. The term peers is now applied
to those who are impannelled in an inquest upon
a person, for convicting or acquitting him of any
offence laid to his charge; and the reason why
the jury is so called is because, by the common
law and custom of this kingdom, every person is
to be tried by his peers or equals; a lord by the
lords, and a commoner by commoners. See
JURY.

A peeress may be noble by descent, creation,
or marriage. If a peeress by descent or creation,
marries a person under the degree of nobility, she
still continues noble; but, if she obtains that dignity
only by marriage, she loses it on her afterwards mar-
rying a commoner; yet by courtesy she generally
retains the title of her nobility. A countess or
baroness may not be arrested for debt or trespass;
for though, in respect of their sex, they cannot
sit in parliament, they are nevertheless peers of

the realm, and shall be tried by their peers, &c.

PEER OF THE REALM, a noble lord who has a seat and vote in the house of lords or peers. These lords are called peers, because though there is a distinction of degrees in our nobility, yet in public actions they are equal, as in their votes in parliament, and in trying any nobleman or other person impeached by the commons, &c. See **PARLIAMENT**. In a judicial capacity the house of peers is the supreme court of the kingdom, having at present no original jurisdiction over causes, but only upon appeals and writs of error; to rectify any injustice or mistake of the law committed by the courts below. To this authority they succeeded of course, upon the dissolution of the Aula Regia. For as the barons of parliament were constituent members of that court, and the rest of its jurisdiction was dealt out to two other tribunals, over which the great officers who accompanied those barons were respectively delegated to preside, it followed that the right of receiving appeals, and superintending all other jurisdictions, still remained in that noble assembly, from which every other great court was derived. They are, therefore, in all cases the last resort, from whose judgment no farther appeal is permitted; but every subordinate tribunal must conform to their determination.

PEER, a town of the Netherlands, thirty miles north of Liege, and thirty north-east of Louvain.

PEERGAUM, in geography, a town of Hindostan, in the province of Aurnghabad, between POONAH, and Perrainda. It is situated at the confluence of the Sursutty and the Beemah, and belongs to the Mahrattas. Long. 79° 59' E. Lat. 18° 23' N.

PEEVISH, *adj.* } Supposed by Junius
PEEVISHLY, *adv.* } to be formed by corrup-
PEEVISHNESS, *n. s.* } tion from perverse;
Skinner rather derives it from beeish, as we say waspish; Minsheu from the Teut. *vietrich i. e. pecuinus*; 'quodd similis sit bruto.' Petulant; fretful; querulous; waspish; the adverb and noun-substantive corresponding.

For what can breed more *peevish* incongruities, Than man to yield to female lamentations? *Sidney*.

She is *peevish*, sullen, froward,
Proud, disobedient, stubborn, lacking duty. *Shakespeare*.

If thou hast the mettle of a king,
Being wronged as we are by this *peevish* town,
Turn thou the mouth of thy artillery,
As we will ours against these saucy walls. *Id.*

I will not presume
To send such *peevish* tokens to a king. *Id.*

He was so *peevishly* opinionative and proud that he would neither ask nor hear the advice of any. *Hayward*.

Some miscarriages in government might escape through the *peevishness* of others; envying the public should be managed without them. *King Charles*.

Those deserve to be doubly laughed at, that are *peevish* and angry for nothing to no purpose. *L'Estrange*.

It will be an unpardonable, as well as childish *peevishness*, if we undervalue the advantages of our knowledge, and neglect to improve it. *Locke*.

Neither will it be satire or *peevish* invective to affirm, that infidelity and vice are not much diminished. *Swift*.

You may find

Nothing but acid left behind.

From passion you may then be freed,
When *peevishness* and spleen succeed. *Id.*

The *peevish* youth, who ne'er had found before
A rival of his skill, indignant heard,
And soon (for various was his tuneful store)
In loftier tones defied the simple bird. *Couper*.

PEG, *n. s. & v. a.* Teut. *pegge*; Dan. *pege*; Swed. *pigg*. A wooden pin; to fasten with a peg; 'to take down a peg,' or 'a peg lower,' is to depress, degrade in some given or supposed degree

You are well tun'd now; but I'll let down
The *pegs* that make this musick. *Shakespeare*.

I will rend an oak,
And *peg* thee in his knotty entrails, till
Thou'st howl'd away twelve winters. *Id.*
Solid bodies foreshew rain; as 'boxes and *pegs* of wood, when they draw and wind hard. *Bacon*.

Remember how in arms and politics,
We still have worsted all your holy tricks
Trepanned your party with intrigue,
And took your grandees down a *peg*. *Hudibras*.

Taking the shoots of the past spring, and *pegging* them down in very rich earth, by that time twelve-month they will be ready to remove. *Evelyn*.

The teeth are about thirty in each jaw: all of them claviculars or *peg* teeth, not much unlike the tusks of a mastiff. *Grew*.

If he be cholerick, we shall treat him like his little friend, and hang him upon a *peg* till he comes to himself. *Addison*.

The *pegs* and nails in a great building, though they are but little valued in themselves, are absolutely necessary to keep the whole frame together. *Id. Spectator*.

A finer petticoat can neither make you richer, more virtuous, or wise, than if it hung upon a *peg*. *Swift*.

PEGANUM, in botany, wild Syrian rue, a genus of the monogynia order, belonging to the dodecandria class of plants; and in the natural method ranking under the twenty-sixth order, multisilique.

PEGASIDES, a name of the Muses, from Pegasus.

PEGASUS, among the poets, a horse imagined to have wings, and fabled to have sprung from the blood of Medusa: being that whereon Bellerophon was fabled to be mounted when he engaged the Chimæra. See **CHIMERA**. He was also mounted by Perseus when he destroyed the sea-monster that was to devour Andromeda.—Ovid. The opening of the fountain Hippocrene, on mount Helicon, is ascribed to a blow of Pegasus's hoof. He was feigned to have flown away to heaven, where he became a constellation. Hence

PEGASUS, in astronomy, the name of a constellation of the northern hemisphere, in form of a flying horse. See **ASTRONOMY**.

PEGU, or **PEGUE**, formerly a considerable kingdom of Asia, beyond the Ganges, but now a province of the Burmhan empire.

The original inhabitants call themselves *Mow*, by the Chinese and Burmese they are termed *Taleing*; and by the Siamese, *Mingmon*. The province of Pegu extends along the mouths of the two great rivers, Irrawaddy and Thualayn, (or of Ava and Martaban), and occupies the sea-

coast from the frontiers of Aracan to those of Siam. The town of Prome was its northern frontier.

The river Pegu, which was supposed to come from China, rises among the hills about 100 miles from the sea, which form the boundaries between the Burmhan and Pegu countries. Its communication with the sea is by the Rangoon, and in the fair season it is almost dry. The country inland from the river is clear of trees and brushwood; but on the banks of the river there are thickets which abound with the domestic fowl in a wild state, and peacocks, but is also infested with tigers. About a day's journey to the south of the town of Pegu the inhabitants are much molested by wild elephants, that occupy in great numbers a forest to the north-east. These powerful animals, allured by the early crops of rice and sugar-cane, make predatory incursions in large troops, and do a great deal of mischief, devastating much more than they devour. This province appears to be the favorite abode of the elephant, and one of his Burmhan majesty's titles is, 'lord of the white elephant, and of all the elephants in the world.'

Pegu having long been subject to the Burmhan empire of Ava, the history of its conquest and other particulars will be found under the article **BURMHAN EMPIRE**. When the Burmese had completed its subjugation, they subdivided it into thirty-two districts, and named it Henza-wuddy, which is the Sanscrit name for the whole province. Minderajee Praw, the fifth king of the present dynasty, abrogated many severe penal laws imposed by his predecessors upon the native Peguers. Justice is now distributed with considerable impartiality, and the only distinction at present between a Burmhan and a Peguer consists in the exclusion of the latter from places of public trust and power. In Pegu there are no brick buildings allowed, except such as belong to the king, or are dedicated to their divinity Gaudma, his majesty having prohibited the use of brick and stone in private buildings.

From the plenty of teak with which the Pegu forests about this province has long been famous for ship-building. So early as 1707 the Arabs of Muscat, a considerable maritime power, were accustomed to build ships here, some of which carried from thirty to fifty guns. For the procuring of this valuable timber a great intercourse subsists between Pegu and all the British provinces, particularly Bengal, where the vessels are almost wholly fabricated from Pegu teak, with the assistance of the country timber.

The inhabitants of Pegu appear to have, attained civilisation at a more early period than the Burmese; and, though now reduced, formerly to have been a great and potent nation. In the early Portuguese histories they are denominated the Pandalus of Mon, and they are supposed to have founded the ancient Kalaminhm empire. The name Kalaminhm, mentioned by the Portuguese, is probably connected with the Siamese name of the nation, Mingmon. The Mon language is still used by the inhabitants of Pegue, and appears quite original. It is said by the Burmese and Siamese to have no affinity to either of their languages.

Owing to the long and sanguinary wars carried on between the Burmese and Peguers, the greater part of this province, although one of the most productive in India, remains desolate and uncultivated.

PEGU, the capital of the foregoing province, is situated ninety miles by water above Rangoon. Its ancient extent may be traced by the ruins of the ditch and wall that surround it. From these it appears to have been a quadrangle, each side measuring one mile and a half; the breadth of the ditch was about sixty yards, and the depth ten or twelve feet. When in repair, even in the dry season, the ditch had seldom less than four feet of water. The wall was composed of brick badly cemented with clay mortar, about thirty-five feet thick, with small equidistant bastions about 300 yards asunder; but the whole in a most ruinous state. The Burmhan monarch, Alompra, when he acquired possession of the city in 1757, razed every building to the ground, and dispersed or led into captivity all the inhabitants. The temples, or praws, which are very numerous, were the only buildings that escaped his fury, and and of these the great pyramid of Shoemadoo has alone been kept in repair. This temple is composed of brick and mortar, without excavation or aperture of any sort, octagonal at the base, and spiral at the top; each side of the base measuring 162 feet. The great breadth diminishes abruptly in the shape of a speaking trumpet. The extreme height of the building, above the level of the country, is 361 feet. On the top is an iron tee or umbrella, fifty-six feet in circumference, which is gilt, and it is the intention of the king to gild the whole building. On the north side of the building are three large bells of good workmanship, suspended near the ground, to announce to the spirit of Guadma the approach of a suppliant, who places his offering, consisting of boiled rice, a plate of sweetmeats, or a cocoa-nut fried in oil, on a bench near the foot of the temple. After it is offered the devotee seems indifferent what becomes of it, and it is often devoured in his presence by the crows or dogs, whom he never attempts to disturb during their repast. Numberless images of Guadma lie indiscriminately scattered about.

About 1790 the reigning monarch of Ava, to conciliate the natives, issued orders to rebuild Pegu, and invited the scattered families of former inhabitants to repeople their deserted city. At the same time he ordered the viceroy to quit Rangoon, and make Pegu his future residence. The present inhabitants, who have been induced to return, consist chiefly of rhaahans, or priests, the followers of the court, and a few poor Pegu families. The men of business continue to reside at Rangoon, and the whole number of inhabitants of this town do not as yet exceed 7000. A great proportion of the former inhabitants are either extinct or scattered over the provinces of Tongho, Martahan, and Talowmeon. The city, in its renovated state, is fenced round with a stockade from ten to twelve feet high. There is one main street running east and west, crossed at right angles by two smaller streets. At each extremity of the principal street there is a gate defended by a wretched piece of ordnance, and a

few musketeers, who never post sentinels, and are generally asleep in a neighbouring shed. The streets of Pegu are spacious, and paved with brick, which the ruins of the old town plentifully supply. The houses are all made of mats, or of sheathing boards, supported on bamboos or posts, and extremely combustible. As a precaution against fire, at each door there stands a long bamboo, with an iron hook to pull down the thatch; and there is also another pole adapted to suppress flame by pressure. Almost every house has earthen pots filled with water on the roof, and a particular class of people, whose business is to prevent and extinguish fires, walk the street during the night. The only article of consequence manufactured here is silk and cotton, which the females weave for domestic use. The thread is well spun, and the texture of the web close and strong, being chequered like tartan.

PEGUNTUM, in ancient geography, according to Ptolemy, or *Peguntæ*, as Pliny has it, a town or citadel of Dalmatia, on the Adriatic, opposite to the island Brattia, five miles off, and forty east of Salona. According to Fortis, a mountain, a large hollow, and submarine springs are seen here.

PEINE FORT ET DURE, Lat. *pœna fortis et dura*, signifies a special punishment formerly inflicted on those who, being arraigned of felony, refuse to put themselves on the ordinary trial, but stubbornly stand mute.

PEINGHEE, a town of the Burmhan empire, situated on the west side of the Irrawaddy, in lat. $18^{\circ} 31' N.$, long $94^{\circ} 50' E.$ In the vicinity a great quantity of teak timber is procured, which is carried to Rangoon, and thence exported to the British territories. The forests are in sight from the river: the trees are felled in the dry season, and when the monsoon sets in carried down the Irrawaddy. Here also ships of 300 or 400 tons are frequently built.

PEIRCE (James), an eminent dissenting minister, was born at Wapping, in London, in 1664, and was educated at Utrecht and Leyden; after which he spent some time at Oxford, for the benefit of the Bodleian library. He then for two years preached the Sunday evening lecture at the meeting-house in Miles Lane, London, and afterwards settled at Cambridge. In 1713 he was removed to a congregation at Exeter, where he continued till 1718: when he was ejected for refusing to sign the Calvinistic articles of faith. Upon this a new meeting was opened at Exeter, of which Mr. Peirce continued minister till his death, in 1726. He was a man of the strictest virtue, exemplary piety, and great learning. He wrote, 1. *Exercitatio philosophica de Homœmeria Anaxagorea*. 3. Thirteen pieces on the Controversy between the Church of England and the Dissenters. 3. Ten pieces on the Controversy about the Ejectment at Exeter. 4. Six pieces on the Doctrine of the Trinity. 5. A Paraphrase and Notes on the Epistles of St. Paul to the Colossians, Philipians, and Hebrews. 6. An Essay in favor of giving the Eucharist to Children. 7. Fourteen Sermons.

PEIRESC (Nicolas Claude Fabri), an eminent antiquarian, born in 1580, was descended

from an ancient and noble family, seated originally at Pisa in Italy. At ten years of age he was sent to Avignon, where he spent five years in the Jesuits' College, in the study of the languages. In 1595 he removed to Aix, and entered upon philosophy. In 1596 he was sent to finish his course under the Jesuits at Tournon, where he turned his attention to cosmography. Being recalled by his uncle, in 1597, he returned to Aix, and entered there upon the study of the law. In 1598 he went again to Avignon, to carry on his course of law under one Peter David; who was also well skilled in antiquities. He returned in 1603 to Aix, at the earnest request of his uncle, who resigned to him his senatorial dignity, for which the degree of LL.D. was a necessary qualification. Peiresc, therefore, took that degree January 18th 1604. In 1618 he was nominated by Louis XIII. abbot of Sancta Maria Aquestrensis. He died the 24th of June 1637 in his fifty-seventh year. His works are, 1. *Historia provinciæ Galliæ Narbonensis*; 2. *Nobilium ejusdem provinciæ familiarum Origines, et separatim Fabriciæ*; 3. *Commentarii rerum omnium memoriâ dignarum suâ ætate gestarum*; 4. *Liber de ludicris naturæ operibus*; 5. *Mathematica et astronomica varia*; 6. *Observationes mathematicæ*; 7. *Epistolæ ad S. P. Urbanum VIII., cardinales Barbarinos, &c.*; 8. *Authores antiqui Græci et Latini de ponderibus et mensuris*; 9. *Eulogia et epitaphia*; 10. *Inscriptiones antiquæ et novæ*; 11. *Genealogia domûs Austriacæ*; 12. *Catalogus librorum biblioth. reg.*; 13. *Pœmata varia*; 14. *Nummi Gallici, Saxonici, Britannici, &c.*; 15. *Linguae Orientales, Hebræa, Samaritana, Arabica, Egyptiaca, et Indices librorum harum linguarum*; 16. *Observationes in varios auctores.*

PEKAN, in zoology. See **MUSTELA**.

PEKIN, or **PEKING**, the capital of China, where the emperor generally resides; it is situated in a very fertile plain, twenty leagues from the great wall. This name, which signifies the northern court, is given it to distinguish it from the city Nankin, or the southern court. The emperor formerly resided in the latter, but the Tartars, a restless and warlike people, obliged him to remove his court to the northern provinces, that he might more effectually repel their incursions. It is an exact square, and divided into two parts; namely, that which contains the emperor's palace, which is in the new city, or, as it is called, the Tartars' city, because it is inhabited by Tartars ever since they conquered this empire; the other, called the Old City, is inhabited by the Chinese. The circuit of both these together is fifty-two Chinese lys, each of which contains 240 geometrical paces; being, without the suburbs, full six leagues in circumference, according to the most accurate measurement made by order of the emperor. The population is generally estimated at 2,000,000, but others state it at double that number. See our articles **CHINA**, and **OBSERVATORY**.

PELAGIANS, a Christian sect who appeared about the fifth, or end of the fourth century. They maintained, it is said, the following doctrines: 1. That Adam was by nature mortal, and, whether he had sinned or not, would cer-

tainly have died. 2. That the consequences of Adam's sin were confined to his own person. 3. That new born infants are in the same situation with Adam before the fall. 4. That the law qualified men for the kingdom of heaven, and was founded upon equal promises with the gospel. 5. That the general resurrection of the dead does not follow in virtue of our Saviour's resurrection. 6. That the grace of God is given according to our merits. 7. That this grace is not granted for the performance of every moral act; the liberty of the will, and information in points of duty, being sufficient, &c. The founder of this sect was

PELAGIUS, a native of Great Britain; but whether of England, Scotland, or Wales, is uncertain. Dr. Henry says, he was born in North Wales November 13th, 354; and that his real name was Morgan, of which Pelagius is a translation. He was educated in the monastery of Banchor, in Wales, of which he became a monk, and afterwards abbot. In the early part of his life he went over to France, and thence to Rome, where he promulgated opinions different from those of the church. His morals being irreproachable, he gained many disciples; and the heresy made so rapid a progress that it became necessary for the pope to exert his power. Pelagius, to avoid the danger, in 409 passed over to Sicily, attended by his friend and pupil Celestius. In 411 they landed in Africa, continued some time at Hippo, and were present at the famous conference between the Catholics and Donatists, held at Carthage in 412. Thence they travelled to Egypt; and from Egypt, in 415, to Palestine, where they were graciously received by John, bishop of Jerusalem. In the same year Pelagius was cited to appear before a council of seventeen bishops, held at Diospolis. They were satisfied with his creed, and absolved him of heresy. The African bishops, however, being displeased with their proceedings, appealed to the Roman pontiff: he first approved, and afterwards condemned, the opinions of Pelagius, who, with his pupil Celestius, was publicly excommunicated; and all the bishops who refused to subscribe the condemnation of the Pelagian heresy were immediately deprived. What became of him after this period is unknown; but it is probable that he retired to Bangor, and died abbot of that monastery. He wrote, 1. *Expositionum in epist. Paulinas*, lib. xiv. 2. *Epistola ad Demetriadem de virginitate*. 3. *Explanaciones symboli ad Damasum*. 4. *Epistolæ ad viduam duæ*. 5. *De libero arbitrio*. These and many other fragments are scattered among the works of St. Jerome. They are also collected by Garnerius, and published in *Append. op. Mercatoris*, p. 373. Cave.

PELAGIUS I., pope of Rome, was born in Rome, and elected pope in 555. He endeavoured to reform the clergy; and, when Rome was besieged by the Goths, obtained many concessions from Totila, in favor of the citizens. He died in 560.

PELAGIUS II. (pope), succeeded Benedict I. in 578. He labored much to reconcile the bishops of Istria and Venice to the Roman see, but without success, and he opposed John, pa-

triarch of Constantinople. He died of the plague in 590.

PELAGOSA, an island in the Adriatic, near Dalmatia, which, together with several rocks that appear above water near it, are the remains of an ancient volcano. Fortis, in his *Travels into Dalmatia*, says, 'The lava which forms the substance of this island is perfectly like the lava of Vesuvius. If a naturalist should land there, and visit on purpose the highest parts of the island, perhaps we might then know whether it has been thrown up by a submarine volcano, as the island near Santerini was in our age; or if we ought to believe it the top of some ancient volcanic mountain, of which the roots and sides have been covered by the waters which divided Africa from Spain, forming the straits of Gibraltar; an invasion that no one can doubt of who has examined the bottoms and shores of our sea. The Lissan fishermen say that Pelagosa is subject to frequent and violent earthquakes; and the aspect of the island proves, at first sight, that it has suffered many revolutions; for it is rugged, ruinous, and subverted.' It is sixteen miles south-west of Agosta, and thirty from the Diomedæ Isles.

PELAIAM, a Levite, one of the chiefs of those who returned from captivity, and who signed the covenant that Nehemiah renewed with the Lord. Neh. viii. 7, x. 10.

PELASGI, **PELASGIANS**, a very ancient people of Greece, originally of Arcadia, according to Hesiod; so named from Pelasgus, their first king, though others derive the name from Πελαιγος, a stork, on account of their wandering manner of life.—Strabo. They first inhabited Argolis, in Peloponnesus, which from them was called Pelasgia. Thence, about A. A. C. 1883, they emigrated into Æmonia, and were afterwards dispersed into various parts of Greece; particularly Epirus, Crete, Lemnos, Lesbos, and Argos. Some of them settled in Magna Græcia, in Italy: others occupied a third part of Thessaly, hence called Pelasgiotis. In short, they spread through so many parts of Greece that the poets gave their name to the Greeks in general, and name the whole country from them.—Homer, Hesiod.

PELASGIA, a name given to Greece, from the PELASGI. See the last article.

PELASGIA, 1. The ancient name of Lesbos; so called from the Pelasgi.—Diodorus Siculus, Pliny. 2. The ancient name of Peloponnesus, from Pelasgus, a native of the country.—Nicolaus Damascenus, Ephorus. 4, 5. Pelasgia was also an ancient name of Epirus and Peloponnesus.

PELASGICUM, the north wall of Athens; so called from the builders, the Pelasgi.—Pausanias, Pliny. There was an execration pronounced on any that should build houses under this wall; because the Pelasgi, while dwelling there, entered into a conspiracy against the Athenians.—Thucydides.

PELASGIOTÆ. See PELASGI.

PELASGIOTIS, a third part of Thessaly, situated between Pieria and Macedonia on the north and west, Thessalotis on the south, and Magnesia on the east.—Strabo, Pliny.

PELASGUS, in fabulous history, a son of Jupiter and Niobe, who reigned in Sicily, and from whom his subjects, the Pelasgi, derived their name.

PELATE, free-born citizens, among the Athenians, who by poverty were reduced to the necessity of serving for wages. During their servitude they had no vote in the management of public affairs, as having no estate to qualify them; but this restriction was removed, whenever they had released themselves from their servile situation, which they were allowed to do when able to support themselves. While they continued servants, they had a right to change their masters. They were often called *Thetæ*.

PELATIAH, son of Hananiah, and father of Ishi, of the tribe of Simeon. He subdued the Amalekites upon the mountain of Seir. 1 Chron. iv. 42.

PELATIAH, the son of Benaiah, a prince of the Jews, who lived in the time of Zedekiah king of Judah, and opposed the wholesome advice given by Jeremiah, to submit to king Nebuchadnezzar (See Jerem. xxxviii. 15—20, and Ezek. xi. 1—4). Ezekiel's vision, while he was a captive in Mesopotamia, against Pelatiah, Jaazaniah, and twenty-three other princes who joined with them, is recorded in Ezek. xi. 5—13, with the immediate death of Pelatiah, while Ezekiel was delivering his prophecy.

PELE, two ancient towns of Thessaly; the one subject to Eurypylus, the other to Achilles; both extinct. Peleus was the gentilitious name. Steph.

PELEG, son of Eber, the fifth in descent from Noah, was born in A. M. 1757. He was named Peleg, which signifies division, because in his time the earth began to be divided (Gen. x. 25, xi. 16). Whether Noah had begun to divide the earth among his descendants, some years before the building of Babel; or Peleg came into the world the same year that Babel was begun, and at the confusion of languages; or whether Eber, by a spirit of prophecy, gave his son the name of Peleg before the tower of Babel was begun, is not certain. That which here perplexes the interpreters is, first, that Peleg came into the world not above 100 years after the deluge. But it should seem that the number of men was not then sufficient for such an undertaking as that of Babel; second, Joktan, the brother of Peleg, had already thirteen sons at the time of this dispersion, which happened after the confusion of Babel, Gen. x. 26—29. Peleg being born in the thirty-fourth year of Eber (Gen. xi. 16), it is impossible that Joktan should have had such a number of children at the birth of Peleg. It seems therefore probable that he was not born at the time of the dispersion. To this may be answered, that Moses has there enumerated the names of the thirteen sons of Joktan by way of anticipation, though they were not born till a good while after the confusion at Babel; but, as they possessed a very large country, it was proper to take notice of them among the other descendants of Noah, who divided the provinces of the east among themselves. However this may have been, at the age of thirty Peleg begat Reu; and he died at the age of 239.

PELETHITES, AND CHERETHITES, ~~1800~~ famous in the reign of king David. They were the most valiant men in the army of that prince, and had the guard of his person. See 2 Sam. xv. 18, xx. 7; Patrick's Commentaries, Pool's Annotations, and Delany's History of David.

PELETHRANII, a name given to the Lapithæ, either from their town of Pelethronium, or from their leader Pelethronius. To them mankind are indebted for the invention of the bit with which they tamed their horses.

PELETHRONIUM, a town of Thessaly, in a flowery part of mount Pelios; so named from Pelios, and *ῥοσά*, flowers.—Nicander. Lucan says the Centaurs were natives of that place; to whom Virgil assigns mount Othrys. See CENTAURS, LAPITHÆ, and LAPITHUS.

PELEUS, in fabulous history, a king of Thessaly, son of Æacus and Endeis, the daughter of Chiron. He was the only mortal man who ever married an immortal. He was concerned in the murder of his brother Phocus, and was therefore obliged to leave his father's dominions, and he fled to the court of Eurytus the son of Actor, who reigned at Phthia; or, according to Ovid, to Ceyx, king of Trachinia. He was purified of his murder by Eurytus, who gave him his daughter Antigone in marriage. As Peleus and Eurytus went to the chase of the Calydonian boar, the father-in-law was accidentally killed by an arrow, which his son-in-law had aimed at the beast. This obliged him to banish himself from Phthia, and he went to Iolchos, where he was purified of this homicide by Acastus, the king of the country. His residence at Iolchos was short: Astydamia, the wife of Acastus, fell in love with him; but, when she found him insensible to her passion, she accused him of attempts upon her virtue. The king partly believed the accusation; but not willing to violate the laws of hospitality, by putting him to death, he ordered his officers to conduct him to Mount Pelion, and there tie him to a tree, and leave him to the wild beasts. The order of Acastus was obeyed; but Jupiter, knowing the innocence of his grandson Peleus, ordered Vulcan to set him at liberty. Peleus then assembled his friends to punish Acastus. He took Iolchos, drove the king from his possessions, and put to death the wicked Astydamia. On the death of Antigone, Peleus made love to Thetis, but the goddess fled from him; and, the more effectually to evade his pursuit, she assumed the shape of a bird, a tree, or a tygress. Peleus offered a sacrifice to the gods; and Proteus informed him, that, to obtain Thetis, he must surprise her while she was asleep in her grotto, near the shores of Thessaly. This advice was followed, and Thetis, unable to escape, at last consented to marry him. Their nuptials were celebrated with extraordinary solemnity, all the gods attending and making them valuable presents. Ate, the goddess of Discord, was the only one who was not invited, and she punished this neglect by throwing an apple into the midst of the assembly, with this inscription, *Detur pulchriori*. The celebrated Achilles was the fruit of this marriage, whose education was early entrusted to his great grandfather Chiron, and afterwards to Phœnix, the son of Amyntor. His death

was the source of great grief to Peleus; but Thetis, to comfort her husband, promised him immortality, and ordered him to retire into the grotto of the island of Leuce, where he should see and converse with the manes of his son. Peleus had a daughter called Polydora, by Antigone.

The PELEW, or PALAOS ISLANDS, so called by the Spaniards, who discovered them, were made known to the rest of the world chiefly by the shipwreck of the East India Company's packet Antelope in 1783, captain Wilson, the relation of which, composed by Mr. Keate, has given to these islands an interest much beyond what they would have excited under any other circumstances; none of them being above a league in circuit, and the whole surrounded by a coral reef, which extends from them six leagues to the west. They are moderately elevated, covered with trees, amongst which are the ebony, the bread fruit, and cocoa palm. The sugar-cane is indigenous here, and the natives make a confection of its juice. The woods abound in fowls, which were allowed to remain unmolested until the English taught the natives that they might be taken for food.

The natives are described by Mr. Keate in terms of the warmest eulogy, as a hospitable, gay, and innocent race. They are well-made, of a deep copper-color, with long hair; the men go naked, but the women wear two pieces of fringe made of the fibres of the cocoa-nut husk; both sexes are tattooed, and stain their teeth black. Their houses are elevated off the ground three feet on stones, and are constructed of planks and bamboos; they have besides large halls for the holding public assemblies. Their utensils, instruments, and canoes, are similar to those of the Society Islands, and they make pots of clay. Fish is their principal food. The government is composed of a king, and rupacks, or nobles, whose insignia of dignity is a bracelet of bone on the wrist: to the king belongs the whole territorial property of the islands, the subjects having no other riches than their canoes, their arms, and utensils. Their only idea of religion consists in the belief of the soul's surviving the body. Their language is the Polynesian, or dialect of the Malay. The geographical position of these islands is lat. 6° 10' N., 134° to 135½° E.

The Pelew Islands may be considered as the western limit of the great chain of New Philippines, or Carolinas, which extend between lat. 5° and 12°, and long. 134° and 170°. This great chain is very little known, but it seems to be formed of a number of groups, whose particular direction is north and south, like most of the chains of the Grand Ocean.

The king of Pelew imbibed so great an esteem for captain Wilson that he entrusted his second son, Lee Boo, to his care, to accompany him to England. The prince was of a most amiable disposition, and of good capacity: he died of the small-pox at captain Wilson's house in London, in the year 1784, at about twenty years of age. In return for the kindness shown by Abba Thulle, the prince of Pelew, to the crew of the Antelope, the East India Company in the year 1791 sent

him a number of cattle and other handsome presents. The stock left in the Pelew Islands, with the exception of the sheep, had greatly increased in 1802. At that time several Europeans resided on the islands, for the purpose of collecting biche de mar, tortoise-shell, and shark's fins. The Jesuits of Manila, in the Philippines, endeavoured in 1696 to reduce these islands, and effected a landing in 1710. But those who landed were never more heard of; and the ship which transported them was compelled to depart, leaving them to their fate.

PELF, *n. s.* Barb. Lat. *peltra*. Money; riches.

The thought of this doth pass all worldly *pel*.
Sidney.

Hardy elf,
Thou darrest view my direful countenance;
I read thee rash and heedless of thyself,
To trouble my still seat and heaps of precious *pel*.
Spenser.

Immortal gods, I crave no *pel*,
I pray for no man but myself. *Shakespeare.*

Of traffic or return she never taketh care;
Not provident of *pel*, as many islands are.
Dryden.

He called his money in;
But the prevailing love of *pel*
Soon split him on the former shelf:
He put it out again. *Dryden's Horace.*
To the poor if he refused his *pel*,
He used them full as kindly as himself. *Swift.*

PELIADES, the daughters of Pelias, were Alceste, Pisidice, Pelopea, and Hippothoe, to whom Hyginus adds Medusa. Their mother's name was Anaxibia, the daughter of Bias and Philomache, the daughter of Amphion. After their parricide (see PELIAS) the Peliades fled to the court of Admetus, where Acastus, the son-in-law of Pelias, pursued them, and took their protector prisoner. The Peliades died, and were buried in Arcadia.

PELIAS, in fabulous history, the twin-brother of Neleus, was son of Neptune by Tyro, daughter of Salmoneus. Their birth was concealed by their mother, who wished their father to be ignorant of her incontinence. They were exposed in the woods, but were preserved by shepherds; and Pelias received his name from a spot of the color of lead in his face. Some time after Tyro married Cretheus, son of Æolus, king of Iolchos, and became mother of three children, of whom Æson was the eldest. Pelias visited his mother, and was received in her family; and, after the death of Cretheus, he unjustly seized the kingdom, which belonged to the children of Tyro by Cretheus. To strengthen himself in his usurpation, Pelias consulted the oracle; and when he was told to beware of one of the descendants of Æolus, who should come to his court with one foot shod and the other bare, he privately removed the son of Æson, and declared that he was dead. These precautions proved vain. Jason, the son of Æson, who had been educated by Chiron, returned to Iolchos, when come to years of maturity; and, having lost one of his shoes in crossing the Anaurus or the Evenus, Pelias perceived that this was the person whom he had so much dreaded. He was unwilling to act with violence

to a stranger, who had excited the admiration of the people. But when Jason arrived at his palace with his friends, and boldly demanded the kingdom, Pelias said that he would voluntarily resign the crown to him, if he would go to Colchis to avenge the death of Phryxus, the son of Athamas, whom Æetes had cruelly murdered; adding that the expedition would be attended with the greatest glory, and that nothing but the infirmities of age had prevented himself from punishing the assassin. This patriotic proposal was accepted by the young hero, and his intended expedition was made known all over Greece. See ARGONAUTS, JASON, and MEDEA. According to Ovid, Æson was still living when the Argonauts returned, and was restored to youth by the magic of Medea. This change in the vigor and the constitution of Æson astonished all the inhabitants of Iolchos; and the daughters of Pelias expressed their desire to see their father's infirmities vanish by the same powerful magic. Medea, who wished to avenge the injuries which her husband Jason had received from Pelias, raised the desires of the Peliades, by cutting an old ram to pieces, and boiling the flesh in a cauldron, and then turning it into a fine young lamb. After they had seen this successful experiment, the Peliades cut their father's body to pieces, after they had drawn all the blood from his veins, on the assurance that Medea would replenish them by her wonderful power. The limbs were immediately put into a cauldron of boiling water; but Medea suffered the flesh to be totally consumed, and refused to give the promised assistance, and the bones of Pelias did not even receive a burial.

PELICAN, *n. s.* Fr. *pellican*; Lat. *pelicanus*. A bird of the anseres order. See below.

I am like a *pelican* of the wilderness.

Psalm cii. 6.

Should discarded fathers

Have this little mercy on their flesh;

'Twas this flesh begot those *pelican* daughters.

Shakspeare.

The *pelican* hath a beak broad and flat, like the slice of apothecaries.

Hakewill on Providence.

There are two sorts of *pelicans*; one lives upon the water and feeds upon fish; the other keeps in deserts, and feeds upon serpents and other reptiles: the *pelican* has a peculiar tenderness for its young; it generally places its nest upon a craggy rock; the *pelican* is supposed to admit its young to suck blood from its breast.

Calmet.

PELICAN, in ornithology. See PELICANUS.

PELICAN, in chemistry, is a glass alembic, consisting of one piece. It has a tubulated capital, from which two opposite and crooked beaks pass out, and enter again at the belly of the cucurbit. This vessel has been contrived for a continual distillation and cohobation, which chemists call circulation. The volatile parts of substances put into this vessel rise into the capital, and are obliged to return through the crooked beaks into the cucurbit; and this without interruption, or luting and unluting the vessels. Although the *pelican* seems to be a very convenient instrument, it is now little used; either because the modern chemists have not so much patience as the ancient chemists had for making long experiments; or because they find that two

mattresses, the mouth of one of which is inserted in the mouth of the other, produce the same effect.

PELICANUS, in ornithology, a genus belonging to the order of anseres. The bill is straight, without teeth, and crooked at the point; the face is naked, and the feet are palmated. Mr. Latham enumerates no fewer than thirty different species, besides varieties. The most remarkable are:—

1. *P. aquilus*, or the man-of-war bird, in the body about the size of a large fowl; in length three feet, and in breadth fourteen. The bill is slender, five inches long, and much curved at the point; the color is dusky; from the base a reddish dark-colored skin spreads on each side of the head, taking in the eyes: from the under mandible hangs a large membranaceous bag attached some way down the throat, as in the *pelican*, and applied to the same uses; the color of this is a fine deep red, sprinkled on the sides with a few scattered feathers: the whole plumage is brownish black, except the wing coverts, which have a rufous tinge: the tail is long, and much forked; the outer feathers are eighteen inches or more in length, the middle ones from seven to eight: the legs are small, all the toes are webbed together, and the webs are deeply indented; the color of them is dusky-red. The female differs in wanting the membranaceous pouch under the chin, and in having the belly white: in other things it is like the male. The frigate *pelican*, or man-of-war bird, is chiefly, if not wholly, met with between the tropics, and ever out at sea, being only seen on the wing. It is usual with other birds, when fatigued with flying, to rest on the surface of the water; but nature, from the exceeding length of wing ordained to this, has made the rising therefrom utterly impossible; though perhaps this is no defect, as it scarcely seems to require much rest. From the length of wing, and its apparent easy gliding motion (much like that of the kite), it appears capable of sustaining very long flights, and it is often seen above 100, and sometimes above 200, leagues from land. It also attacks gulls and other birds which have caught a fish, when it obliges them to disgorge it, and then seizes it before it falls into the water. They make nests on trees, and on the rocks. They lay one or two eggs of a flesh-color marked with crimson spots. The young birds are covered with grayish-white down: the legs are of the same color, and the bill is white. There is a variety of this species, which is less, measuring only two feet nine inches in length; the extent from wing to wing is five feet and a half. The bill is five inches long, and red; the base of it and bare space round the eye are of the same color; the nostrils are sufficiently apparent, and appear near the base; the shape of the bill is as in the larger one: the head, hind part of the neck, and upper parts of the body and wings are ferruginous brown; the throat, fore part of the neck, and breast, are white; the tail is greatly forked as in the other; the legs are of a dirty-yellow. Some suppose that the greater and lesser frigates are the same birds, in different periods of age.

2. *P. bassanus*, the gannet, or sofian goose,

weighs seven pounds; the length is three feet one inch; the breadth six feet two inches. The bill is six inches long, straight almost to the point, where it inclines down; and the sides are irregularly jagged, that it may hold its prey with more security: about an inch from the base of the upper mandible is a sharp process pointing forward; it has no nostrils, but in their place a long furrow, that reaches almost to the end of the bill; the whole is of a dirty white, tinged with ash color. The tongue is very small, and placed low in the mouth; a naked skin of a fine blue surrounds the eyes, which are of a pale yellow, and are full of vivacity: this bird is remarkable for the quickness of its sight. Martin tells us that *solan* is derived from an Irish word expressive of that quality. From the corner of the mouth is a narrow slip of black bare skin, that extends to the hind part of the head; beneath the chin is another that, like the pouch of the pelican, is dilatable, and of size sufficient to contain six entire herrings; which in the breeding season it carries at once to its mate or young. The young birds, during the first year, differ greatly in color from the old ones; being of a dusky hue, speckled with numerous triangular white spots; and at that time resemble in colors the speckled diver. Each bird, if left undisturbed, would only lay one egg in the year, but if that be taken away they will lay another, if that is also taken then a third, but never more than that season. Their egg is white and rather less than that of the common goose; the nest is large, and formed of any thing the bird finds floating on the water, such as grass, sea-plants, shavings, &c. These birds frequent the Isle of Ailsa, in the Frith of Clyde; the rocks adjacent to St. Kilda; the Stalks of Soulliskerry, near the Orkneys; the Skelig Isles, off the coasts of Kerry, Ireland; and the Bass Isle, in the Frith of Forth: the multitudes that inhabit these places are prodigious. These birds are well known on most of the coasts of England, but not by the name of the *solan* geese. In Cornwall and in Ireland they are called gannets; by the Welsh *gan*. We are uncertain whether the gannet breeds in any other parts of Europe besides our own islands; except, as Mr. Ray suspects, the *sula* (described in Clusius's *Exoticks*, which breeds in Feroe Isles) be the same bird.

3. *P. carbo*, the corvorant, sometimes exceeds seven pounds in weight; the length three feet four inches; the extent four feet two inches; the bill dusky, five inches long, destitute of nostrils; the base of the lower mandible is covered with a naked yellow skin, that extends under the chin, and forms a sort of pouch; a loose skin of the same color reaches from the upper mandible round the eyes and angles of the mouth; the head and neck are of a sooty blackness, but under the chin of the male the feathers are white; and the head in that sex is adorned with a short, loose, pendant crest; in some both the crest and hind part of the head are streaked with white. The coverts of the wings, the scapulars, and the back, are of a deep green, edged with black, and glossed with blue; the quill feathers and tail dusky; the legs are

short, strong, and black; the middle claw serrated on the inside; the irides are of a light ash-color. These birds occupy the highest parts of the cliffs that impend over the sea; they make their nests of sticks, sea-tang, grass, &c., and lay six or seven white eggs of an oblong form. In winter they disperse along the shores, and visit the fresh waters, where they make great havoc among the fish. They are remarkably voracious, having a most sudden digestion, promoted by the vast quantity of small worms that fill their intestines. The corvorant has the rankest and most disagreeable smell of any bird, even when alive. Its form is disagreeable; its voice hoarse and croaking, and its qualities base. The Chinese make great use of these birds, or a congenerous sort, in fishing; not for amusement, but profit.

4. *P. graculus*, the shag, called in the north of England the crane, is much inferior in size to the corvorant; the length is twenty-seven inches; the breadth three feet six inches; the weight three pounds and three quarters. The bill is four inches long, and more slender than that of the preceding; the head is adorned with a crest two inches long, pointing backward; the whole plumage of the upper part of this bird is of a fine and very shining green; the edge of the feathers a purplish black; but the lower part of the back, the head, and neck, wholly green; the belly is dusky; the tail of a dusky hue, tinged with green; the legs are black, and like those of the corvorant. Both these kinds agree in their manners, and breed in the same places; and, what is very strange in web-footed birds, will perch and build in trees: both swim with their head quite erect, and are very difficult to be shot; for, like the grebes and divers, as soon as they see the flash of the gun, they pop under water, and never rise but at a considerable distance.

5. *P. onocrotalus*, or the pelican of Asia, Africa, and America; though Linnæus thinks that the pelican of America may be a distinct variety. This creature, in Africa, is much larger in the body than a swan, and somewhat of the same shape and color. Its four toes are all webbed together; and its neck in some measure resembles that of a swan; but the singularity in which it differs from all other birds is in the bill and the great pouch underneath. This enormous bill is fifteen inches from the point to the opening of the mouth, which is a good way back behind the eyes. At the base the bill is somewhat greenish, but varies towards the end, where it hooks downwards. The under chap is still more extraordinary; for to the lower edges of it hang a bag, reaching the whole length of the bill to the neck, which is said to be capable of containing fifteen quarts of water. This bag the bird has a power of wrinkling up into the hollow of the under chap; but by opening the bill, and putting one's hand down into the bag, it may be distended at pleasure. The skin of which it is formed will then be seen of a bluish ash-color, with many fibres and veins running over its surface. It is not covered with feathers, but with a short downy substance, as smooth and as soft as satin, and is attached all along to

the under edges of the chap, is fixed backward to the neck of the bird by proper ligaments, and reaches nearly half way down. When this bag is empty it is not seen; but, when the bird has fished with success, it is then incredible to what an extent it is often seen dilated. For the first thing the pelican does in fishing is to fill up the bag; and then it returns to digest its burden at leisure. When the bill is opened to its widest extent, a person may run his head into the bird's mouth, and conceal it in his monstrous pouch, thus adapted for very singular purposes. Tertre affirms that it will hide as many fish as will serve sixty hungry men for a meal. This pelican was once also known in Europe, particularly in Russia; but it seems to have deserted our coasts. This is the bird of which so many fabulous accounts have been propagated; such as its feeding its young with its own blood, and its carrying a provision of water for them in its great reservoir in the desert. But the absurdity of the first account answers itself; and, as for the latter, the pelican uses its bag for very different purposes than that of filling it with water. Clavigero, in his History of Mexico, says that, "there are two species, or rather varieties, of this bird in Mexico; the one having a smooth bill, the other a notched one." The pelican, says Labat, has strong wings, furnished with thick plumage of an ash-color, as are the rest of the feathers over the whole body. Its eyes are very small, when compared with the size of its head; there is a sadness in its countenance, and its whole air is melancholy. It is slow of flight, and, when it rises to fly, performs it with difficulty and labor; but, when it perceives a fish sufficiently near the surface, it darts down upon it with the swiftness of an arrow, seizes it with unerring certainty, and stores it up in the pouch. It reposes for the night, and often spends a great part of the day, sitting in dismal solemnity, and, as it would seem, half asleep on a tree. The same indolence attends them even in preparing for incubation, and defending their young when excluded. The native Americans kill vast numbers; not to eat, for they are not fit even for the banquet of a savage, but to convert their large bags into purses and tobacco pouches. Some authors say the pelican lives sixty or seventy years. Captain Keeling, in his voyage to Sierra Leone, says the pelicans there are as large as swans, of a white color, with exceeding long bills; and M. Thevenot, in his Travels to the Levant, observes that the pelicans about some parts of the Nile near the Red Sea swim by the bank side like geese, in such great numbers that they cannot be counted. F. Morrolla, in his Voyage to Congo, says, pelicans are often met with in the road to Singa, and are all over black, except on their breast, which is of a flesh color like the neck of a turkey. He adds that father Francis de Pavia informed him that on his journey to Singia he observed certain large white birds, with long beaks, necks, and feet, which, whenever they heard the sound of an instrument, began immediately to dance and leap about the rivers, where they always reside, and whereof they were great lovers; this, he said, he took a great pleasure to contemplate, and conti-

nued often upon the banks of the rivers to observe.

6. *P. pussus*, or the great booby, called by Linnæus *pelicanus bassani pussus*, frequents the rivers and sea coasts of Florida, pursuing and devouring fishes. Mr. Catesby informs us, that he has several times found them disabled, and sometimes dead, on the shore; whence he thinks that they meet with sharks or other voracious fishes, which destroy them. The bird is about the size of a goose; the head and neck remarkably prominent; the back of a brown color; the belly dusky white; the feet black, and shaped like those of a corvorant; the head elegantly spotted with white; the wings extend six feet when spread. Both this species and the *sula* have a joint in the upper mandible of the bill, by which they can raise it considerably from the lower one without opening the mouth.

7. *P. sula*, the booby, is somewhat less than a goose; the basis of the bill yellow, and of bare feathers; the eyes of a light gray color; the lower part of the bill of a light brown. The colors of the body are brown and white; but varied so in different individuals that they cannot be described by them. Their wings are very long; their legs and feet pale yellow, shaped like those of corvorants. They frequent the Bahama Islands, where they breed all months in the year, laying one, two, or three eggs, on the bare rock. While young, they are covered with a white down, and continue so till they are almost ready to fly. They feed on fish, but have a very troublesome enemy in the man-of-war bird, which lives on the spoils obtained from other sea-birds, particularly the booby. Such readers as desire further information respecting this numerous genus may consult Edwards's History of Birds; Natural History of Jamaica; Mem. de l'Academie Royale des Sciences, depuis 1666 jusqu'à 1699, tom. 3, p. 186; Willoughby; Pennant's British and Arctic Zoology; and Latham's Synopsis of Birds.

PELIDES, a patronymic of Achilles and Pyrrhus, as descended of Peleus.

PELIGNI, an ancient nation of Italy, who dwelt near the Sabines and the Marsi. Their chief towns were Continium and Sulmo. Liv. viii. 6, 29. Strabo 5.

PELINNA, or PELINNÆUM, an ancient town of Macedonia. Strabo. xiv. Liv. xxxvi. 10, and 14.

PELION, or PELIOS, a mountain of Thessaly, near Ossa, hanging over the Sinus Pelasgicus, or Pegasicus; its top covered with pines, the sides with oaks, and wild ash. (Diod. Sic. Mela. Virg. Hor. Ovid. Sen. V. Flac.) From this mountain was cut the spear of Achilles, called pelias, which none but himself could wield. (Homer.) Dicearchus, Aristotle's scholar, found this mountain 1250 paces higher than any other of Thessaly. (Pliny.) Pelius, and Pelias, the epithets. (Cic. Catul.)

PELLIUM, a town of Macedonia. Liv. 31, 40.

PELL (John), D.D., an eminent mathematician, of an ancient family in Lincolnshire, born at Southwyke in Sussex, March, 1st, 1610, and educated at Cambridge, where he took his degree of M.A. in 1630. In 1629 he drew up

the Description and Use of the Quadrant. In 1643 he was chosen professor of mathematics at Amsterdam. In 1646 the prince of Orange appointed him professor of that at Breda. He returned to England in 1652; and, in 1654, was sent by Oliver Cromwell as agent to the protestant Swiss Cantons. He resided at Zurich four years, with the title of Ablegatus, and returned on the 23d of June, 1658. After the Restoration, which he contributed to promote, he entered into orders; was created D.D., ordained deacon in 1661, and rector of Laington, in Essex, in 1663. He published a work on Algebra, and on the tenth of Euclid, with other tracts. He died at London, December 12th, 1685.

PELLA, in ancient geography, a town of Macedonia on the confines of Emathia. (Ptolemy.) Herodotus allots it to Bottiaea, a maritime district on the Sinus Thermaicus. It was the royal residence, situated on an eminence, on the south-west, encompassed with unpassable marshes summer and winter: in which, next the town, a citadel rose like an island, placed on a bank or dam, a prodigious work, both supporting the wall and securing it from hurt by the circumfluent water. At a distance, it seemed close to the town, but was separated from it by the Ludias, running by the walls, and jointed to it by a bridge, 120 stadia from the sea, the Ludias being so far navigable. (Liv. Strab.) Mela calls it Pelle. It was the birth-place of Philip, who enlarged it; and afterwards of Alexander (Strabo, Mela); and continued to be the royal residence down to Perseus. (Livy.) It is called Pella Colonia, by Pliny, and Colonia Julia Augusta upon coin. It afterwards declined, and had but few and mean inhabitants. (Lucian.) It is now called Παλατισια, Palatisia, i. e. the little Palace. (Holstenius.) Pellæus, the gentili-tious name and epithet. Lucian, Juv. Mart.

PELLA, a town of the Decapolis, on the other side the Jordan; abounding in water. (Poly. Plin.) built by the Macedonians (Strabo); or by Seleucus (Eusebius); anciently called Butis (Stephanus); and Apamea (Strabo); thirty-five miles north-east of Gerasa. (Ptol.) Thither the Christians, just before the siege of Jerusalem by Titus, were divinely admonished to fly. (Eusebius.) It was the utmost boundary of the Peræa, or Transjordan country, on the north. (Josephus.)

PELLÆUS, a title of Alexander.

PELLANE, a town of Laconia. Paus. iii. 21.

PELLE. See PELLA.

PELLEGRIN (Simon Joseph), a learned French writer, born at Versailles, in 1663. He entered into the order of Servites; and wrote on various subjects, some spiritual, others dramatic, poetical, &c. In 1704 he obtained the Academy's prize, for his Epistle to Louis XIV. on the success of his arms. He wrote also some comedies and operas. By the influence of madame Maintenon, he was translated to the order of Cluny. He died in 1745, aged eighty-two.

PELLEGRINI (Antony), an eminent historical painter, born at Padua, in 1674. He studied at Venice under Paul Pagan. The duke of Manchester brought him over to England, where he performed several capital works for the nobility. He died in 1741.

PELLEGRINO (Tibaldi, or Theobald), an eminent Italian painter and sculptor, born at Bologna, in 1522. He was employed by Charles V. to ornament the Escorial; for which he was rewarded with 100,000 crowns and the title of marquis. He died in 1592, aged seventy.

PELLEGRINO of Modena, an eminent Italian painter, born in that city in 1511. He studied under Raphael, and was employed in the paintings of the Vatican. He died of a wound received in the street in attempting to rescue his son, who had committed murder.

PELLERIN (Joseph), an eminent French antiquarian, born in 1683. He was commissary general, and clerk of the French marine. He became famous for a capital collection of medals, which Louis XIV. enabled him to purchase; and he enriched the science with a valuable work on the subject, in nine vols. 4to. with numerous elegant plates. He died in 1782, aged ninety-nine.

PEL'LET, *n. s.* } Fr. *pelote*; a diminutive
PEL'LETED, *adj.* } of Lat. *pila*. A little ball;
a bullet: pelleted is consisting of bullets.

That which is sold to the merchants is made into little pellets and sealed. *Sandya.*

My brave Egyptians all,
By the discarding of this pelleted storm,
Lie graveless. *Shakespeare.*

A cube or pellet of yellow wax as much as half the spirit of wine, burnt only eighty-seven pulses.

Bacon.

The force of gunpowder hath been ascribed to rarefaction of the earthy substance into flame, and so followeth a dilatation: and therefore, lest two bodies should be in one place, there must needs also follow an expulsion of the pellet or blowing up of the mine; but these are ignorant speculations; for flame, if there were nothing else, will be suffocated with any hard body, such as a pellet is, or the barrel of a gun; so as the hard body would kill the flame.

Id.

How shall they reach us in the air with those pellets they can hardly roll upon the ground?

L'Estrange.

In a shooting trunk, the longer it is to a certain limit, the more forcibly the air passes and drives the pellet.

Ray.

I dressed with little pellets of lint. *Wierman.*

PELLETS, in heraldry, those roundles that are black; called also ogresses and gunstones, and by the French heralds *toteaux de sable*.

PELLETIER (Claude), a learned French lawyer, born at Paris, in 1630. He was counsellor of the Chatelet, and president of the Merchants; in which office he constructed the celebrated quay which bears his name. He succeeded M. Colbert, as comptroller general of the finances. He wrote several books on Law; also *Comes Theologus*, *Comes Rusticus*, &c.

PELLETIER (James), M.D., and an eminent mathematician, born at Mans in 1517. He was an excellent Latin and French poet, a good orator, physician, and grammarian. He wrote *Oeuvres Poétiques*, *Commentaires Latins sur Euclide*, and a Treatise on Orthography. He died at Paris in 1683.

PELLETIER (Bertrand), a late eminent French chemist, born at Bayonne in 1761. He was ad-

mitted a pupil in the chemical laboratory of the French College, when very young, and gave early proofs of genius. He studied five years under the celebrated professor Darcet, and at twenty-one years of age published *Observations on the Arsenical Acid*. After this his discoveries and publications became numerous: on the crystallisation of sulphur, cinnabar and the deliquescent salts; on zeolites; on the oxygenated muriatic acid; on ethers, phosphorus, the phosphoric acid, &c. But during his operations on that most astonishing production of chemistry phosphorus, he burned himself so dangerously, that he was confined to bed for six months. On his recovery, he began his analysis of the plumbagos of various countries: and, during his analysis of the carbonate of barytes, discovered by experiments on various animals that this earth is a true poison. He also analysed strontian, verditer, &c. &c., and was going on successfully with his chemical experiments, when he at last fell a sacrifice to his thirst after science, by respiring the oxygenated muriatic gas till it had almost killed him instantaneously; but, though he recovered for the moment, it induced a convulsive asthma, and pulmonary consumption, which cut him off in the flower of his age; and he died at Paris, July 21st, 1797. He was a member of the Academy of Sciences at Paris.

PELLEW'S (Sir Edward), ISLANDS, a group of islands on the north coast of New Holland, and west shore of the gulf of Carpentaria. They extend thirty-four miles east and west, by twenty-two north and south: the five principal islands being from seven to seventeen miles in length. They are of a hard close grained sand-stone, with a small mixture of quartz, slightly impregnated with iron. Where the surface is not bare rock, it is sand, with a small proportion of vegetable soil, in no case approaching to fertility. The larger islands are, however, covered with trees, bushes, and in some low places with grass. In the larger islands traces of the kangaroo and turtle tracks are to be seen. The names of them are Vanderlin's, North-West, South-West, and Centre Islands. Lat. of Centre Island 15° 39' south.

PELLEW, CAPE, the northern point of an island of Sir Edward Pellew's group, in the gulf of Carpentaria, called North Island. Long. 137° 2' E., lat. 16° 30' 30" S.

PEL'LICLE, *n. s.* Lat. *pellicula*. A thin skin or film.

After the discharge of the fluid, the *pellicle* must be broke. *Sharp.*

PELLICLE, among physicians, denotes a thin film or fragment of a membrane.

PELLISON, or PELISSON FONTANIER (Paul), an author of the seventeenth century, was born at Beziers in 1614, and educated in the Protestant religion. In 1652 he purchased the post of secretary to the king, and in 1657 became first deputy to M. Fouquet. He suffered by the disgrace of that minister; and in 1661 was confined in the Bastille, whence he was not discharged till 1665. During his confinement he applied himself to the study of controversy; and in 1670 abjured the Protestant religion. Louis XIV. rewarded him with an annual pension of 2000

crowns, and several posts. In 1676 he had the abbey of Giment, and some years after the priory of St. Orens at Auch. He died at Versailles in 1693. His principal works are 1. The History of the French Academy. 2. Reflections on Religious Disputes, &c., in four vols. 12mo. 3. The History of Louis XIV. 4. Historical Letters and Miscellanies in three vols. 12mo.

PELLITORY, BASTARD, PELLITORY, DOUBLE. Two species of achillaea.

PELLITORY OF SPAIN. See ANTHEMIS.

PELLITORY OF SPAIN, FALSE, a species of chrysanthemum.

PELLITORY, TREE. See ZANTHOXYLUM.

PE'LLMELL, *adv.* Fr. *pelle melle*; Lat. *pello* and *miscella*. Confusedly; tumultuously; with confused violence.

When we have dashed them to the ground,

Then *desse* each other; and *pell-mell*

Make work upon ourselves.

Shakespeare. King John.

Never yet did insurrection want

Such moody beggars, starving for a time

Of *pell-mell* havock and confusion. *Shakespeare.*

He knew when to fall on *pell-mell*,

To fall back and retreat as well. *Hudibras.*

After these senators have in such manner, as your grace hath heard, battered episcopal government, with their paper-shot, then they fall *pell-mell* upon the service-book. *White.*

PELLS, *n. s.* Lat. *pellis*, *pell*, a record. Rolls or records of the Exchequer.

Clerk of the *pell*, an officer belonging to the exchequer, who enters every teller's bill into a parchment roll called *pellis acceptorum*, the roll of receipts; and also makes another roll called *pellis exituum*, a roll of the disbursements. *Bailey.*

PELLUCID, *adj.* Lat. *pellucidus*. Clear; transparent; not opaque.

The air is a clear and *pellucid* menstruum, in which the insensible particles of dissolved matter float, without troubling the *pellucidity* of the air; when on a sudden by a precipitation they gather into visible misty drops that make clouds. *Locke.*

We consider their *pellucidness*, and the vast quantity of light that passes through them without reflection. *Keill.*

The colours are owing to the intermixture of foreign matter, with the proper matter of the stone: this is the case of agates and other coloured stones, the colours of several whereof may be extracted, and the bodies rendered as *pellucid* as crystal, without sensibly damaging the texture. *Woodward.*

If water be made warm in any *pellucid* vessel emptied of air, the water in the vacuum will bubble and boil as vehemently as it would in the open air in a vessel set upon the fire, till it conceives a much greater heat. *Newton's Opticks.*

PELOPEIA, in fabulous history, the daughter of THYESTES, and mother, by him, of ÆGISTHUS. See these articles.

PELOPIA, a festival observed by the Eleans in honor of Pelops. A ram was sacrificed on the occasion, which both priests and people were prohibited from partaking of, on pain of excommunication from Jupiter's temple; the neck only was allotted to the officer who provided wood for the sacrifice. This officer was called *ῥυτρυς*; and white poplar was the only wood made use of at this solemnity.

PELOPIDAS, the son of Hippoclus, a celebrated general of Thebes, in Bœotia. He was descended of an illustrious family, and had immense riches, which he distributed with uncommon liberality among the poor citizens. He was the intimate friend of Epaminondas; and these two patriots, by their valor and public spirit, raised their country to a degree of importance and glory, that it never enjoyed before or after them. Thebes had been for some time under the government of Spartan tyrants, who exiled Pelopidas and the other friends of Theban independence; but Pelopidas returned from Athens, with a chosen band of twelve other exiled Thebans, who killed the Spartan tyrants, and restored liberty to their country. The Thebans then elected him governor of Bœotia, and associated Epaminondas with him; and these two great men immortalised their names by the decisive victory at Leuctra. In a war which the Thebans afterwards carried on against Alexander, tyrant of Phœræ, Pelopidas was appointed commander, but had nearly lost his life, by trusting himself unarmed in the tyrant's camp. Though in the character of an ambassador, he was seized as a prisoner, but rescued by Epaminondas. He was afterwards killed in a battle with the same tyrant, though his troops obtained the victory, A. A. C. 364; but his death was amply revenged by the Thebans, who took Phœræ, and killed the tyrant. Statues of brass were erected, and every other mark of respect paid to the memory of Pelopidas; and his children were endowed with a large territory of land.—Xenoph. Plut. C. Nep. Diod. Polyb.

PELOPONNESIAN WAR, Peloponnesiacum bellum, a famous war, which lasted twenty-seven years between the Athenians and the inhabitants of Peloponnesus, with their respective allies, and which ended in the overthrow of the Athenian republic, and its subjection to thirty tyrants. It is the most interesting of all the wars which happened among the inhabitants of ancient Greece. See **ATTICA**.

PELOPONNESUS, a large peninsula in the south of Greece; so called, from Pelopis *πेलίος*, or insula, though properly not an island, but a peninsula; yet wanting but little to be one, viz. the isthmus of Corinth, ending in a point.—Dionysius. It was anciently called Apia and Pelasgia; and is situated between the Ægean and Ionian Seas, and resembles a plantain leaf, by its angular recesses or bays.—Plin, Strabo, Mela. Strabo adds, from Homer, that one of its ancient names was Argos, with the epithet Achaicum, to distinguish it from Thessaly, called Pelasgium. It was divided into six parts; viz. Argolis, Laconica, Messenia, Elis, Achaia, and Arcadia.—Mela. It is now called the Morea. It comprehended the most southern parts of Greece; and was 200 miles long, and 140 broad.

PELOPS, in fabulous history, the son of Tantalus king of Phrygia. In his infancy he was murdered by his father, cut in pieces, and served up as a feast to the gods, to try their divine omniscience. None of them however eat of him, but Ceres, who eat one of his shoulders. Jupiter restored him to life, and gave him an

ivory shoulder, which had the miraculous power of healing all diseases by its touch; and he punished the impiety of Tantalus, by condemning him to eternal hunger and thirst, in the view of excellent food and drink in hell. Pelops afterwards went into Elis, where he became a suitor of Hippodamia, the daughter of Oenomaus, king of Pisa, who, being warned by an oracle that he would perish by the hands of his son-in-law, and being himself an excellent charioteer, refused to marry her to any person but the man who should overcome him in a chariot race. The previous condition being that those whom he defeated were to forfeit their lives, thirteen young princes had already perished. Pelops, however, ventured to compete with him, and having previously bribed Myrtilus, his charioteer, to mount him on an insufficient chariot, Oenomaus was killed in the course, but, with his last breath, requested Pelops to avenge him on Myrtilus; which he accordingly did, by throwing him into the sea, from him named Myrtoum Mare. Pelops then married Hippodamia, by whom he had Atreus, Thyestes, Pitheus, Troezen, &c. He afterwards became so powerful that all the territory of Greece beyond the isthmus of Corinth was from him named Peloponnesus. After his death he received divine honors, and was revered above all the other heroes of Greece. He had a temple at Olympia, erected by Hercules near that of Jupiter.

PELORIAS, **PELORIS**, or **PELORUS**, in ancient geography, one of the three capes of Sicily, now called Faro. It is said to have been so named from Pelorus, the pilot of the ship which carried Hannibal out of Italy, whom that general, when he found the tide driving the vessel into the straits of Charybdis, killed, on the supposition that he was going to betray him to the Romans; and therefore, to gratify his name, he named the cape after him.

PELT, *n. s.* Teut. *peltze*; Lat. *pellis*. Skin; hide.

The camel's hair is taken for the skin or *pelt* with the hair upon it. *Brown's Vulgar Errors*.

A scabby tetter on their *pelts* will stick,
When the raw rain has pierced them to the quick.

Dryden.

PELT, *v. a.* } Fr. *peloter*; from German
PELTING, *adj.* } *pollern*. Skinner. More probably as Lye suggests contracted from **PELLET**. To throw at; strike with something thrown; hence to annoy: pelting, therefore, is used by Shakspeare for paltry annoyance.

Poor naked wretches, wheresoe'er you are,
That bide the *pelting* of this pitiless storm!
How shall your houseless heads and unfed sides,
Your looped and windowed raggedness defend you?
Shakspeare.

Do but stand upon the foaming shore,
The chiding billows seem to *pelt* the clouds. *Id.*
Could great men thunder, Jove could ne'er be quiet;

For every *pelting* petty officer
Would use his heaven for thunder. *Id.*

Fogs, falling in the land,
Have every *pelting* river made so proud,
That they have overborn their continents. *Id.*
A tenement or *pelting* farm. *Id.*

No zealous brother there would want a stone
To maul us cardinals, and pelt pope Joan. *Dryden.*

My Phillis me with pelted apples plies,
Then tripping to the woods the wanton hies. *Id.*
Obscure persons have insulted men of great worth,
and pelted them from coverts with little objections.

The whole empire could hardly subdue me, and I
might easily with stones pelt the metropolis to pieces. *Swift.*

No learned disputants would take the field,
Sure not to conquer, and sure not to yield:
Both sides deceived, if rightly understood,
Pelting each other for the public good. *Comper.*

PELTA, a small, light, manageable buckler, used by the ancients. It was worn by the Amazons. It is said to have resembled an ivy leaf in form; by others, it is compared to the leaf of an Indian fig-tree, and, by Servius, to the moon in her first quarter.

PELTARIA, in botany, a genus of the siliculosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the thirty-ninth order, siliquose. The silicula is entire, and nearly orbiculated, compressed plane, and not opening.

PELVIS. (Gr. *πελvis*, a basin; because it is shaped like a basin used in former times). The cavity below the belly. It contains the rectum and urinary bladder, the internal organs of generation, and has its muscles and bones.

The pelvis consists, in the child, of many pieces, but, in the adult, it is formed of four bones; of the os sacrum behind, the ossa innominata on either side, and the os coccygis below. It is wide and expanded at its upper part, and contracted at its inferior aperture. The upper part of the pelvis, properly so called, is bounded by an oval ring, which parts the cavity of the pelvis from the cavity of the abdomen. This circle is denominated the brim of the pelvis; it is formed by a continued and prominent line along the upper part of the sacrum, the middle of the ilium, and the upper part, or crest, of the os pubis. The circle of the brim supports the impregnated womb; keeps it up against the pressure of labor pains; and sometimes this line has been 'as sharp as a paper-folder, and has cut across the segment of the womb;' and so by separating the womb from the vagina, has rendered delivery impossible; and the child escaping into the abdomen the woman has died. The lower part of the pelvis is denominated the outlet. It is composed by the arch of the ossa pubis, and by the sciatic ligaments; it is wide and dilatable, to permit the delivery of the child; but being sometimes too wide, it permits the child's head to press so suddenly, and with such violence upon the soft parts, that the perineum is torn.

Marks of the female skeleton have been sought for in the skull, as in the continuation of sagittal suture; but the truest marks are those which relate to that great function by which chiefly the sexes are distinguished; for while the male pelvis is large and strong, with a small cavity, narrow openings, and bones of greater strength, the female pelvis is very shallow and wide, with a large cavity and slender bones, and every peculiarity which may conduce to the easy passage of the

child. The office of the pelvis is to give a steady bearing to the trunk, and to connect it with the lower extremities, by a sure and firm joining, to form the centre of all the great motions of the body.

PELUSIUM, in ancient geography, a noble and strong city of Egypt, without the Delta, twenty stadia from the sea; situated amidst marshes; and hence its name and its strength. It is called the key or inlet of Egypt, by Diodorus and Hirtius; which being taken, the rest of Egypt lay quite exposed to an enemy. It is called Sin by Ezekiel. Pelusiacus the epithet. (Virgil, Diodorus.) From its ruins arose Damietta. Pelusium was often taken and pillaged during the wars of the Romans, the Greeks, and the Arabs. But in spite of so many disasters she preserved to the time of the Crusades her riches and her commerce. The Christian princes, having taken it by storm, sacked it. It never again rose from its ruins; and the inhabitants went to Damietta. See DAMIETTA.

PEMBROKE, a borough and market town of South Wales, consisting of the two parishes in Castle Martin hundred, Pembrokeshire, and situate on a branch of Milford Haven, ten miles south by east from Haverfordwest, and 256 west from London. It consists principally of one long street, and has two churches, St. Mary's and St. Michael's, and a third, St. Nicholas', in the suburbs. It has a strong resemblance to Edinburgh and Sterling, but on a much smaller scale. It has a town-hall and a free-school, and is watered by two small rivers, over which are handsome bridges. It was anciently surrounded by walls, of which a large portion remain, and had a magnificent castle, seated on a rock, at the west end of the town, supposed to have been founded in 1092 by Arnulph de Montgomery, son of the earl of Shrewsbury, on the site of a more ancient British work. During the Welsh wars it was frequently besieged; but always considered impregnable. It was reduced by Oliver Cromwell. It is now entirely ruinous. Of the town gates that facing the north is the only one now standing; the other two having been long since destroyed. The east gate, which remained in Leland's time, is described by him as consisting of solid iron, and as being highly ornamented.

PEMBROKESHIRE, a county of Wales, takes its name from Pembroke, its principal town, and is seated on the south-west extremity of the principality, being bounded on all sides by the sea, except on the east, where it joins to Caernarvonshire, it being washed on the south by the Bristol Channel, and on the west and north by St. George's Channel or the Irish Sea. Its extent from north to south is about thirty-five miles, and from east to west twenty-nine miles, comprehending about 368,000 acres. It is divided into seven hundreds, containing seven towns, and 144 parishes.

This county is in the province of Canterbury and diocese of St. David's. The surface is for the most part composed of swells or easy slopes, but not mountainous, except a ridge of hills which runs from the coast, near Fisgard, to the borders of Caernarvonshire. These hills are

called the mountains; and the people distinguish the country with reference to the hills, the north side being called above the mountains, and the south side below. A considerable tract, consisting of the country which lies west of Milford Haven, and between that bay and St. George's Channel, is called by the Welsh *Rhos*, which signifies a green field. In this district a colony of Flemings settled, by the permission of Henry I., at the time when the sea had broke through the dykes of their own country, and had done incredible damage. This district was, in Camden's time, called Little England beyond Wales. Giraldus, speaking of the Flemish settled here, says, they are a stout resolute nation, very offensive to the Welsh by their frequent skirmishes: and observes that they were much inured to the clothing trade, and to merchandise; and ready to increase their stock by any labor and hazard, both by sea and land. The Flemings' Way or Road, a work performed by them, may be still seen extending through a long tract of ground. The Welsh, who were not well pleased with this colony, frequently attempted to drive them out by ravaging and spoiling their borders, but without success. The annotator upon Camden informs us, that all Wales with their united force have several times invaded their country, but the Flemings maintained their ground; and *Rhos* is still inhabited by their descendants, who may yet be distinguished by their speech and customs. Mr. Malkin observes that Pembrokeshire has a very great extent of coast; and indeed it seems almost as if it were appended to the main land on the eastern side. The instances of longevity are numerous and remarkable, so that persons living to the age of ninety are by no means of rare occurrence. The country is much subject to rain, in which nature seems kindly to have provided for the dryness of the soil. Snow in ordinary seasons is seldom known to lie longer than a day near the coast. The mountains, however, in the north of the county have their full share. It is a circumstance which has been often noticed, but may be worth repeating, how curiously the woods, exposed to the south and west, are shorn by the winds from the sea. With the exception of a small tract towards the north, this is the most level part of Wales, and seems to bear a resemblance to the general face of English country, as close as the affinity of its inhabitants to the English people; so that it has been called Little England beyond Wales, as before observed. The practice of using surnames always prevailed here as in England; at least in the southern hundreds. The style of building in the towns is little if at all superior to that of Wales in general; but the cottages are good and comfortable. Animal food is much more in use than among the common people in the neighbouring counties, who live very much on the produce of the dairy. The churches of the English or Flemish hundreds afford a very pleasing contrast to those whose external meanness and internal deformity has been so frequently noticed: here they are never seen without tower or spire, and are in general well kept, and adorned with decent monuments. In the places near the coast the defalcation from the simplicity of the Welsh

character is very apparent; and indeed there are few parts of the country where more dissolute manners seem to prevail than about Fismard, Newport, and St. Dogmaels.

The great division of the county is into English and Welsh. There are about 144 parishes of these seventy-four are inhabited by the English, and sixty-four by the Welsh. The rest speak both languages, or rather neither. The country west of Kilgernow, Remais, and Dewis Land hundreds, is esteemed equal in purity to that of any other district. The English hundreds, four out of the seven, are those of Ross, Castle-Martin, Narberth, and Dangleddy. In these two last, and in the western and northern parts of Ross hundred, the English and Welsh are mixed. It is far from being the fact that these two descriptions of people are so estranged from each other as never to intermarry. In all the English towns and villages of Pembrokeshire we find instances enough of English husbands and Welsh wives, or the reverse, to contradict at least the universality of a separation, in itself so highly unnatural. It is one of those strange tales which, having once gone abroad, is inadvertently bandied about by the very people of whom it is told. In former ages, when great animosities prevailed between the old and new settlers, they might probably stand aloof from each other; but after the tranquillity of centuries, that so unaccountable a reserve should continue among the inhabitants of a little district, not exceeding a square of thirty miles, under the same government and laws, frequenting the same weekly markets for the sale of their agricultural produce, and united by the same interests, is in itself improbable, and will be found to be a mistake, to the extent in which it is asserted. This mistaken idea derives its origin from Giraldus, when these puny rivals were continually at war. No doubt it was then true: and from this source the notion was scattered abroad in popular opinions and tales, which still keep their ground; while the original facts and circumstances that occasioned them have been vanishing gradually away. The result of more recent inquiries into the actual state of the two parties is, that though doubtless the subsisting diversity of language prevents that unrestrained intercourse which would otherwise be natural to near neighbours, and tends to perpetuate the recollection of national rivalry, the accounts of absolute and unconquerable alienation, contained in many writers, are by far too highly colored. A similar but equally mistaken idea prevails respecting the difference of language in North and South Wales. It has been said that those who speak one dialect cannot understand the other. In truth they differ not so much from each other as the vulgar English dialects of Kent and Somersetshire. Their principal repugnance consists in the different idiomatic acceptations of words, referable to common roots. The same literary dialect is used by all writers, and is equally understood in all parts of Wales.

The principal rivers of this county are the Teify, Cleddy, and Dowlodge: the less considerable ones are the Gwain, Biran, Nefren, and Rudford. The Teify rises at Llyn Teife, in the

north-east part of Cardiganshire; and, running south-west, passes the towns of Tregaron, Llam-beter, and Newcastle-in-Emlin; at the latter town, turning north-west, it soon afterwards enters this county at Maen, or Defy, and, forming its boundary on the north, passes the town of Cardigan, and unites with St. George's Channel at Kemmaes Head. The Cleddy rises in the north part of the county, in the Prescles Mountains, near Monachlogdu, and, running nearly south, passes within a short distance of Narberth; and, gently winding to the S. S. W., meets the West Cleddy at Llandshipping, and both united flow into Milford Haven, near Lawrenny. The Douglodge River rises in the west part of the county, to the north of Walwy's Castle, and running east is augmented by the waters of the Hiog, about a mile below Haverfordwest; here it turns to the south-east, and unites with the Cleddy opposite Llandshipping.

The sea-coast is in general hilly, with steep or perpendicular cliffs. On tracing it from its north-east point, at the mouth of the Teify, the most remarkable place is Aberkibor Bay, formed by Cammaes Head on the north, and Pendrowry Head on the south, having in its centre the small fishing town of Penyrallt. Next succeeds Newport Bay, near which are the town of Newport and fishing-village of Eglwys Dinas. Fishguard Bay, forming a much better harbour than either of the above, next presents itself, which has near its centre the town of Fishguard, noted for its trade in herrings. Hence the coast running south-west winds round Stumble Head to that of St. David's, off which lies Ramsey Island, with a group of rocks called the Bishop and his Clerks, which are frequented in the breeding season by vast multitudes of sea-fowl, many of which are unknown in every other part of the island. The large bay of St. Bride's succeeds, forming a safe retreat for vessels in all winds but the west and south-west; and beyond some islands on its south side is the entrance to the celebrated Milford Haven and its branches. This justly admired harbour, indenting deeply the southern coast of this county, occupies a large space of it with its great basin and the various curving channels that contribute to form it, which are fed by some inconsiderable streams from the interior of the country. Few of these are dignified with any certain appellation, except the Hiog, though most of them suddenly become great estuaries from mere rivulets, united with the main basin as the claws are with the body of a crab, and equally sinuous. The Hiog rises near the village of St. Catherine, in the north-western part of the county, not far from Fishguard, passing through the centre of the county, and forming a romantic dell for many miles before it reaches the capital town of Haverfordwest in its way to the south. It then becomes navigable, and, widening in its course, meets another branch of the Haven at Llandshipping Ferry, which, fed also by its creative stream, descends from the north-east beneath the groves of Slebratch and Picton Castle. A long winding course succeeds, till a third branch from Loveston in the north-east, and a fourth from the noble ruin of Carew Castle in the south-east, unite beneath

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the elevated mansion, fine park, and rich woods of Lourenny, and form a second junction with this great body of water beneath their impending shades. Swelling into various bays, and studded with sails, this increased estuary inclines towards the west, being soon afterwards joined by a fifth branch, flowing from the ancient town and majestic bastions of Pembroke Castle. Here the grand basin opens, inclining chiefly to the west, but turning abruptly southward near its mouth, and appearing perfectly land-locked when viewed from within. The ports of Hubberston, Haikin, and Milford, occupy one of the many bays near the centre of this great sheet of water, which undoubtedly constitutes the most spacious harbour in the British Island.

The chief manufactures of this county consist of a cotton-mill, near Haverfordwest, which employs about 150 persons; an iron forge at Blackpool; and some iron and tin works on the Teify. This county sends three members to the imperial parliament, viz. one for the shire, one for the town of Pembroke, and one for the town of Haverfordwest. Pembroke, the county town, gives the title of earl to the family of Herbert: Haverfordwest the title of baron to the family of De-la-Poer-Beresford: and Castle Martin the title of baron to the family of Campbell.

PEN, *v. a. & n. s.* (pret. and part. pass. pent). Sax. *pennan* and *pinþan*. To coop; shut up; incage: a fenced or shut up place.

Away with her, and pen her up. *Shakspeare.*

My heavy son

Private in his chamber *pens* himself. *Id.*

My father stole two geese out of a *pen*. *Id.*

The plaister alone would *pen* the humour already contained in the part, and forbid new humour.

Bacon.

The prevention of mischief is prescribed by the Jewish custom; they *pen* up their daughters, and permit them to be acquainted with none. *Harvey.*

Their armour helped their harm, crushed in and bruised

Into their substance *pent*.

Milton.

As when a prowling wolf,
Whom hunger drives to seek new haunts for prey,
Watching where shepherds *pen* their flocks at eve
In burled cotes, amid the field secure,
Leaps o'er the fence with ease into the fold. *Id.*

The glass, wherein it is *penned* up, hinders it to deliver itself by an expansion of its parts. *Boyle.*

Ah! that your business had been mine,

To *pen* the sheep.

Dryden.

She in *pens* his flocks will fold.

Id. Horace.

The cook was ordered to dress capons for supper, and take the best in the *pen*.

L'Estrange.

Ducks in thy ponds, and chickens in thy *pens*,
And be thy turkeys numerous as thy hens. *King.*

PEN, *n. s. & v. a.*

PEN'-KNIFE,

PEN'-MEN.

Lat. *penna*. An instrument of writing: to write: the knife used for making or mending pens: penmen, those who write, or largely use the pen.

I hadde many thingis to write to thee, but I wolde not write to thee bi enke and *penn*, for I hope soone to see thee. *Wiclif Jon. iii.*

No longer might he in this wise endure,

But prively a *penner* gan he borwe,

And in a letre wrote he all his sorwe.

Chaucer. Cant. Tales.

3 B

For prey these shepherds two he took,
Whose metal stiff he knew he could not bend
With hearsay pictures, or a window look,
With one good dance, or letter finely *penned*.

Sidney.

The *pens* that did his pinions bind,
Were like main-yards with flying canvas lined.

Spenser.

Never durst poet touch a *pen* to write,
Until his ink were tempered with love's sighs.

Shakespeare.

I would be loath to cast away my speech; for, be-
sides that it is excellently well *penned*, I have taken
great pains to con it.

Id.

Read this challenge, mark but the *pennings* of it.

Id.

A sentence spoken by him in English, and *penned*
out of his mouth by four good secretaries, for trial of
our orthography, was set down by them.

Camden's Remains.

Some schoolmen, fitter to guide *penknives* than
swords, precisely stand upon it.

Bacon.

He frequented sermons, and *penned* notes with his
own hand.

Hayward on Edward VI.

We might as soon fell an oak with a *penknife*.

Holyday.

The digesting my thoughts into order, and the
setting them down in writing, was necessary; for,
without such strict examination as the *pennings* them
affords, they would have been disjointed and roving
ones.

Digby on the Soul.

Almost condemned, he moved the judges thus:
Hear, but instead of me, my Oedipus;
The judges, hearing with applause, at the end
Freed him, and said, no fool such lines had *penned*.

Denham.

Feathered soon and fledged,
They summed their *pens*; and, soaring the' air sub-
lime,
With clang despaired the ground.

Milton's Paradise Lost.

He remembers not that he took off *pen* from paper
till he had done.

Fell.

Eternal deities!

Who write whatever time shall bring to pass,
With *pens* of adamant on plates of brass.

Dryden.

He takes the papers, lays them down again;
And, with unwilling fingers, tries the *pen*.

Id.

I can, by designing the letters, tell what new idea
it shall exhibit the next moment, barely by drawing
my *pen* over it, which will neither appear if my
hands stand still, or, though I move my *pen*, if my
eyes be shut.

Locke.

Gentlemen should extempore, or, after a little
meditation, speak to some subject without *pennings* of
any thing.

Id.

The four evangelists, within fifty years after our
Saviour's death, consigned to writing that history,
which had been published only by the apostles and
disciples; the further consideration of these holy
penmen will fall under another part of this discourse.

Addison.

Should I publish the praises that are so well
penned, they would do honour to the persons who
write them.

Id.

The precepts *penned*, or preached by the holy
Apostles, were as divine and as perpetual in respect
of obligation.

White.

The descriptions which the evangelists give shew
that both our blessed Lord and the holy *penmen* of
his story were deeply affected.

Atterbury.

Twenty fools I never saw

Come with petitions fairly *penned*,

Desiring I should stand their friend.

Swift.

A *PEN* is usually formed of a goose's quill.
Pens are also sometimes made of silver, brass,
or iron. Dutch *pens* are made of quills that
have passed through hot ashes, to take off the
grosser fat and moisture, and render them more
transparent.

PEN, or *PENSTOCK*. See *PENSTOCK*.

PEN, *FOUNTAIN*, is a pen made of silver,
brass, &c., which has been contrived to contain
a considerable quantity of ink, and let it flow out
by gentle degrees, so as to supply the writer a
long time without being under the necessity of
taking fresh ink.

PEN, *GEOMETRIC*, an instrument in which, by
a circular motion, a right line, a circle, an ellipse,
and other mathematical figures, may be described.
It was first invented and explained by John
Baptist Suardi, in a work entitled *Nouvo Istro-
menti per la Descrizione di diverse Curve An-
tiche e Moderne*, &c. Several writers had ob-
served the curves arising from the compound
motion of two circles, one moving round the
other; but Suardi first realised the principle,
and first reduced it to practice. It has been
lately introduced with success into the steam-
engine by Watt and Bolton.

PEN, *SEA*. See *PENNATULA*.

PENÆA, in botany, a genus of the monogy-
nia order, and tetrandria class of plants; and in
the natural method ranking with those of which
the order is doubtful; *CAL.* diphyllous; *COR.*
campanulatus; the style quadrangular; *COS.*
tetragonal, quadrilocular, and octospermous.

PEN'AL, *adj.* } Fr. *penal*, from Lat. *pena*.

PEN'ALTY, *n. s.* } Denouncing, or enacting, or
used for, punishment: penalty is the punish-
ment incurred or denounced.

Lend this money, not as to thy friend,
But lend it rather to thine enemy,
Who, if he break, thou mayest with better face
Exact the *penalty*. *Shakespeare. Merchant of Venice.*

Adamantine chains and *penal* fires.

Milton.

Many of the ancients denied the Antipodes, and
some unto the *penalty* of contrary affirmations; but
the experience of navigations can now assert them
beyond all dubitation.

Brown.

Political power is a right of making laws with
penalties of death, and consequently all less *penalties*,
for preserving property, and employing the force of
the community in the execution of laws.

Locke.

Gratitude plants such generosity in the heart of
man as shall more effectually incline him to what is
brave and becoming than the terror of any *penal* law.

South.

Beneath her footstool science groans in chains,
And wit dreads exile, *penalties*, and pains.

Duncied.

PENANCE, or } Old Fr. *penence*. Public
PEN'NANCE. } or private infliction or dis-
cipline for sin.

And bitter *penance*, with an iron whip,
Was wont him once to discipline every day.

Spenser.

Mew her up,
And make her bear the *permanence* of her tongue.

Shakespeare.

No penitentiary, though he had enjoined him
never so straight *penance* to expiate his first of-
fence, would have counselled him to have given over
the pursuit of his right.

Bacon.

Coming now to the vaults of Popery, I ask for their *penances* and purgatory; those Popish *penances* which presumptuous confessors enjoined as satisfactory, and meritorious upon their bold absolutions.

Bp. Hall.

Penance is only the punishment inflicted; not penitence, which is the right word: a man comes not to do *penance*, because he repents him of his sin, but because he is compelled to it. The old canons wisely enjoined three years' *penance*, sometimes more, because in that time a man got a habit of virtue, and so committed that sin no more for which he did *penance*.

Selden.

The scourge
Inexorable, and the torturing hour
Calls us to *penance*.

Milton's Paradise Lost.

A Lorain surgeon, who whipped the naked part with a great rod of nettles till all over blistered, persuaded him to perform this *penance* in a sharp fit he had.

Temple.

PENANCE is a punishment, either voluntary or imposed by authority, for the faults a person has committed. *Penance* is one of the seven sacraments of the Romish church. Besides fasting, alms, abstinence, and the like, which are the general conditions of *penance*, there are others of a more particular kind; as the repeating a certain number of ave-mary's, paternosters, and credos, wearing a hair shirt, and giving one's self a certain number of stripes. In Italy and Spain it is usual to see Roman Catholics almost naked, loaded with chains and a cross, and lashing themselves at every step.

PENATES, in Roman antiquity, a kind of tutelar deities, either of countries or particular houses; in which last sense they differed in nothing from the lares. See *LARES*. They were properly the tutelar gods of the Trojans, and were adopted by the Romans, who gave them the title of *penates*.

PENCARROW, a cape of Cornwall, on the south coast of the English Channel; two miles east of the mouth of the Fowey.

PENCIL, *n. s.* Lat. *penicillum*. A small brush of hair which painters dip in their colors: an instrument for writing with black lead.

Painting is almost the natural man;
For since dishonour trafficks with men's nature,
He is but outside: *pencil'd* figures are
Even such as they give out.

Shakespeare.

The Indians will perfectly represent in feathers whatsoever they see drawn with *pencils*.

Heylyn.

Pencils can by one slight touch restore
Smiles to that changed face, that wept before.

Dryden.

For thee the groves green liveries wear,
For thee the graces lead the dancing hours,
And nature's ready *pencil* paints the flowers.

Id.

A sort of pictures there is, wherein the colours, as laid by the *pencil* on the table, mark out very odd figures.

Locke.

The faithful *pencil* has designed
Some bright idea of the master's mind,
Where a new world leaps out at his command,
And ready nature waits upon his hand.

Pope.

Mark with a pen or *pencil* the most considerable things in the books you desire to remember.

Watts.

Pulse of all kinds diffused their od'rous powers,
Where nature *pencils* butterflies on flowers.

Harte.

One spirit—His

Who wore the platted thorns with bleeding brows,
Rules universal nature. Not a flower
But shows some touch, in freckle, streak, or stain,
Of his unrivalled *pencil*.

Cowper.

PENCILS are of various kinds, and made of various materials; the largest sorts are made of boars' bristles, the thick ends of which are bound to a stick, bigger or less according to the uses they are designed for: these, when large, are called brushes. The finer sorts of pencils are made of camels, badgers, and squirrels' hair, and of the down of swans; these are tied at the upper end with a piece of strong thread, and enclosed in the barrel of a quill. All good pencils, on being drawn between the lips, come to a fine point.

PENCILS, for drawing, are made of long pieces of black-lead or red chalk, placed in a groove cut in a slip of cedar; on which other pieces of cedar being glued, the whole is planed round, and, one of the ends being cut to a point, it is fit for use.

PENCKUM, a town of Germany, in Anterior Pomerania; thirteen miles south-west of Old Stettin, and forty-four N. N. W. of Custring. Long. 31° 59' E. Ferro, lat. 53° 15' N.

PENDA, the first king of Mercia, founded that kingdom, A. D. 626. He was killed by Oswy, king of Northumberland, A. D. 655. See *MERCIA*.

PENDA. See *PENBA*.

PENDALIUM, a promontory of Cyprus.

PEN'DANT, *n. s.* Fr. *pendant* of Lat. *PEN'DENCE*, *PEN'DENCY*, *PEN'DENT*, *adj.* *PEN'DING*, *PEN'DULOUS*, *PEN'DULOSITY*, *n. s.* *PEN'DULOUSNESS*. *pendens, pendeo*. A jewel or any thing suspended; a pendulum; a small flag; pendence, pendency, or pendulosity and pendulousness all mean suspension; the state of being pendent or hanging: pending is depending; hence undecided: pendulous, synonymous with pendent.

Quaint in green she shall be loose enrobed
With ribbons *pendent*, flaring about her head.

Shakespeare.

A *pendent* rock,
A forked mountain, or blue promontory
With trees upon't, that nod unto the world,
And mock her eyes with air. *Id.*
All the plagues, that in the *pendulous* air
Hang fated o'er men's faults, light on thy daughters.

Id.

The Italians give the cover a graceful *pendence* or slopiness, dividing the whole breadth into nine parts, whereof two shall serve for the elevation of the highest top or ridge from the lowest.

Wotton.

To make the same *pendant* go twice as fast as it did, or make every undulation of it in half the time it did, make the line, at which it hangs, double in geometrical proportion to the line at which it hanged before.

Digby on the Soul.

They brought by wond'rous art
Pontifical, a ridge of *pendent* rock
Over the vexed abyss.

Milton's Paradise Lost.

His slender legs he increased by riding, that is, the humours descended upon their *pendulosity*, having no support or suppedaneous stability.

Browne's Vulgar Errors.

Bellerophon's horse, framed of iron, and placed between two loadstones with wings expanded, hung *pendulous* in the air. *Browne.*

Unripe fruit, whose verdant stalks do cleave
Close to the tree, which grieves no less to leave
The smiling *pendent* which adorns her so,
And until autumn on the bough should grow.

Waller.

The grinders are furnished with three roots, and in the upper jaw often four, because these are *pendulous*.

Ray.

I sometimes mournful verse indite, and sing
Of desperate lady near a purling stream,
Or lover *pendent* on a willow tree.

Philips.

A person *pending* suit with the diocesan, shall be defended in the possession.

Agcliffe.

The judge shall pronounce in the principal cause, nor can the appellant alledge *pendency* of suit. *Id.*

The spirits

Some thrid the mazy ringlets of her hair,

Some hang upon the *pendents* of her ear. *Pope.*

PENDANTS are often composed of diamonds, pearls, and other jewels.

PENDANTS, in heraldry, parts hanging down from the label, to the number of three, four, five, or six, at most, resembling the drops in the Doric freeze. When they are more than three, they must be specified in blazoning.

PENDANTS OF A SHIP are those streamers, or long colors, which are split and divided into two parts, ending in points, and hung at the head of masts, or at the yard-arm ends.

PENDENNIS, a peninsula of Cornwall, at the mouth of Falmouth haven, a mile and a half in compass. On this Henry VIII. erected a castle, opposite to that of St. Maw's, which he likewise built. It was fortified by queen Elizabeth, and served them for the governor's house. It is one of the largest castles in Britain, and is built on a high rock. It is stronger by land than St. Maw's, being regularly fortified, and having good outworks.

PENDULUM, *n. s.* *Fr.* *pendule*; *Lat.* *pendulus*. Any weight hung so that it may easily swing backwards and forwards. See below.

Upon the bench I will so handle 'em,

That the vibration of this *pendulum*

Shall make all taylor's yards of one

Unanimous opinion.

Hudibras.

A PENDULUM is a vibrating body suspended from a fixed point. For the history of this invention, see CLOCK. The theory of the pendulum depends on that of the inclined plane. Hence, to understand the nature of the pendulum, it will be necessary to premise some of the properties of this plane. I. Let AC, fig. 1, Plate PARABULUM, be an inclined plane, AB its perpendicular height, and D any heavy body: then the force which impels the body D to descend along the inclined plane AC is to the absolute force of gravity as the height of the plane AB is to its length AC; and the motion of the body will be uniformly accelerated. II. The velocity acquired in any given time by a body descending on an inclined plane, AC, is to the velocity acquired in the same time, by a body falling freely and perpendicularly, as the height of the plane AB to its length AC. The final velocities will be the same; the spaces described will be in the same ratio; and the times of description are

as the spaces described. III. If a body descend along several contiguous planes, AB, BC, CD (fig. 2), the final velocity, namely, that at the point D, will be equal to the final velocity in descending through the perpendicular AE, the perpendicular heights being equal. Hence, if these planes be supposed indefinitely short and numerous, they may be conceived to form a curve; and therefore the final velocity acquired by a body in descending through any curve AF, will be equal to the final velocity acquired in descending through the planes AB, BC, CD, or to that in descending through AE, the perpendicular heights being equal. IV. If, from the upper or lower extremity of the vertical diameter of a circle, a cord be drawn, the time of descent along this cord will be equal to the time of descent through the vertical diameter; and therefore the times of descent through all cords in the same circle, drawn from the extremity of the vertical diameter, will be equal. V. The times of descent of two bodies through two planes equally elevated will be in the subduplicate ratio of the lengths of the planes. If, instead of one plane, each be composed of several contiguous planes similarly placed, the times of descent along these planes will be in the same ratio. Hence, also, the times of describing similar arches of circles similarly placed will be in the subduplicate ratio of the lengths of the arches. VI. The same things hold good with regard to bodies projected upward, whether they ascend upon inclined planes or along the arches of circles. The point or axis of suspension of a pendulum is that point about which it performs its vibrations, or from which it is suspended. The centre of oscillation is a point in which, if all the matter in a pendulum were collected, any force applied at this centre would generate the same angular velocity in a given time as the same force when applied at the centre of gravity. The length of a pendulum is equal to the distance between the axis of suspension and centre of oscillation. Let PN (fig. 3) represent a pendulum suspended from the point P; if the lower part N of the pendulum be raised to A, and let fall, it will by its own gravity descend through the circular arch AN, and will have acquired the same velocity at the point N that a body would acquire in falling perpendicularly from C to N, and will endeavour to go off with that velocity in the tangent ND; but, being prevented by the rod or cord, will move through the arch NB to B, where, losing all its velocity, it will by its gravity descend through the arch BN, and, having acquired the same velocity as before, will ascend to A. In this manner it will continue its motion forward and backward along the arch ANB, which is called an oscillatory or vibratory motion; and each swing is called a vibration. Prop. I. If a pendulum vibrates in very small circular arches, the times of vibration may be considered as equal, whatever be the proportion of the arches. Let PN (fig. 4) be a pendulum; the time of describing the arch AB will be equal to the time of describing CD; these arches being supposed very small. Join AN, CN; then since the times of descents along all cords in the same circles, drawn from one extremity of

Fig. 8.



Fig. 5.

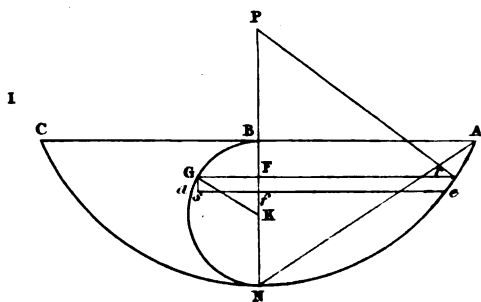


Fig. 4.

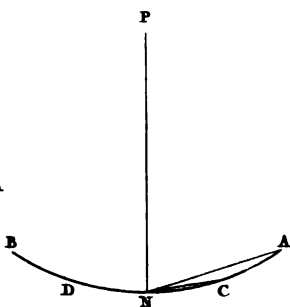


Fig. 7.



Fig. 3.

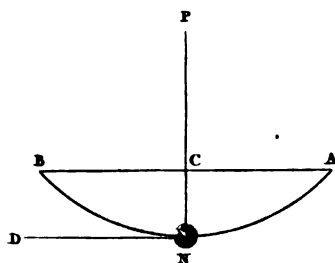


Fig. 9.

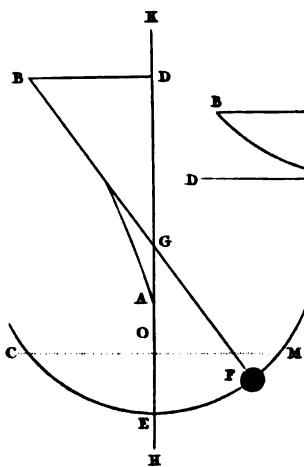


Fig. 1.

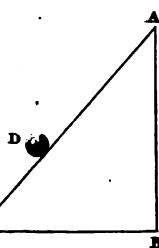


Fig. 6.

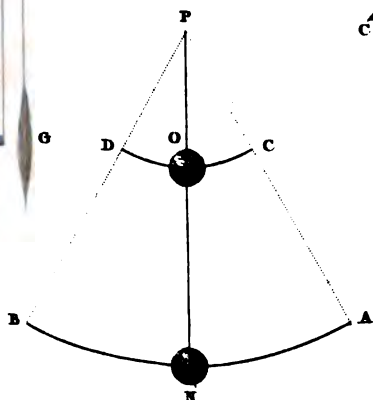
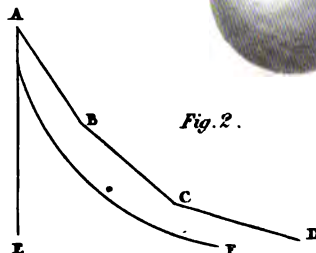


Fig. 2.



the vertical diameter, are equal; therefore, the cords AN, CN, and consequently their doubles, will be described in the same time; but the arches AN, CN, being supposed very small, will therefore be nearly equal to their cords: hence the times of vibrations in these arches will be nearly equal.

PROP. II.—Pendulums which are of the same length vibrate in the same time, whatever be the proportion of their weights. This follows from the property of gravity, which is always proportional to the quantity of matter, or to its inertia. When the vibrations of pendulums are compared, it is always understood that they describe either similar finite arcs, or arcs of evanescent magnitude, unless the contrary is mentioned.

PROP. III.—If a pendulum vibrates in the small arc of a circle, the time of one vibration is to the time of a body's falling perpendicularly through half the length of the pendulum as the circumference of a circle is to its diameter. Let PE (fig. 5) be the pendulum which describes the arch A NC in the time of one vibration; let PN be perpendicular to the horizon, and draw the cords AC, AN; take the arc Ee infinitely small, and draw EFG, *efg*, perpendicular to PN, or parallel to AC; describe the semicircle BGN, and draw *er*, *gs*, perpendicular to EG; now let *t* = time of descending through the diameter 2 PN, or through the cord AN; then the velocities gained by falling through 2 PN, and by the pendulum's descending through the arch AE, will be as $\sqrt{2PN}$ and \sqrt{BF} ; and the space described in the time *t*, after the fall through 2 PN, is 4 PN. But the times are as the spaces divided by the velocities.

Therefore $\frac{4PN}{\sqrt{2PN}}$ or $2\sqrt{2PN} : t :: \frac{Ee}{\sqrt{BF}}$:

time of describing Ee = $\frac{t \times Ee}{2\sqrt{2PN} \times \sqrt{BF}}$.

But in the similar triangles PEF, Eer, and KGF, Gg , As PE = PN : EF :: Ee : er = $\frac{EF}{PN} \times Ee$; And KG = KD : FG :: Gg :

$Gg = \frac{FG}{KD} \times Gg$. But *er* = *Gg*; therefore

$\frac{EF}{PN} \times Ee = \frac{FG}{KD} \times Gg$. Hence $Ee = \frac{PN \times FG}{KD \times EF} \times Gg$. And, by substituting this value of Ee in the former equation, we have the time

of describing Ee = $\frac{t \times PN \times FG \times Gg}{2KD \times EF \times \sqrt{BF} \times 2PN}$:

But by the nature of the circle, $FG = \sqrt{BF \times FN}$, and $EF = \sqrt{PN + PF} \times FN$. Hence, by substitution we obtain the time of describing Ee =

$\frac{t \times PN \times \sqrt{BF \times FN} \times Gg}{2KD \times \sqrt{PN + PF} \times FN \times \sqrt{BF} \times 2PN} =$
 $\frac{t \times \sqrt{PN} \times Gg}{2KD \times \sqrt{PN + PF} \times \sqrt{2}} = \frac{t \times \sqrt{2PN} \times Gg}{4KD \times \sqrt{PN + PF}}$
 $= \frac{t \times \sqrt{2PN}}{2BN \times \sqrt{2PN - NF}} \times Gg$. But NF,

in its mean quantity for all the arches Gg, is nearly equal to NK; for if the semicircle described on the diameter BN, which corresponds to the whole arch AN, be divided into an indefinite number of equal arches Gg, &c., the sum of all the lines NF will be equal to as many times NK as there are arches in the same circle equal to Gg. Therefore the time of describing Ee =

$\frac{t \times \sqrt{2PN}}{2BN \times \sqrt{2PN - NK}} \times Gg$. Whence the time of describing the arch AED =

$\frac{t \times \sqrt{2PN}}{2BN \times \sqrt{2PN - NK}} \times BGN$; and the time of describing the whole arch ABC, or the time of one vibration, is =

$\frac{t \times \sqrt{2PN}}{2BN \times \sqrt{2BN - NK}} \times 2BGN$. But, when the arch ANC is very small, NK vanishes, and then the time of vibration in a very small arc is

$= \frac{t \times \sqrt{2PN}}{2BN \times \sqrt{2PN}} \times 2BGN = \frac{1}{2} t \times \frac{2BGN}{BN}$.
 Now, if *t* be the time of descent through 2 PN; then, since the spaces described are as the squares of the times, $\frac{1}{2} t$ will be the time of descent through $\frac{1}{2} PN$: therefore the diameter BN is to the circumference, 2 BGN, as the time of falling through half the length of the pendulum is to the time of one vibration.

PROP. IV.—The length of a pendulum vibrating seconds is to twice the space through which a body falls in one second as the square of the diameter of a circle is to the square of its circumference. Let *d* = diameter of a circle = 1, *c* = circumference = 3.14159, &c., *t* to the time of one vibration, and *p* the length of the corresponding pendulum; then by last proposition *c* : *d* :: 1" : $\frac{d}{c}$ = time of falling through

half the length of the pendulum. Let *s* = space described by a body falling perpendicularly in the first second: then, since the spaces described are in the subduplicate ratio of the times of description, therefore 1" : $\frac{d}{c}$:: \sqrt{s} : $\sqrt{\frac{1}{2}p}$. Hence

$c^2 : d^2 :: 2s : p$. It has been found by experiment that in latitude 51 $\frac{1}{2}^\circ$ a body falls about 16.11 feet in the first second: hence the length of a pendulum vibrating seconds in that latitude is = $\frac{32.22}{3.14159^2} = 3$ feet 3.174 inches.

PROP. V.—The times of the vibrations of town pendulums in similar arcs of circles are in a subduplicate ratio of the lengths of the pendulums. Let PN, PO (fig. 6), be two pendulums vibrating in the similar arcs AB, CD; the time of a vibration of the pendulum PN is to the time of a vibration of the pendulum PO in subduplicate ratio of PN to PO. Since the arcs AN, CO, are similar and similarly placed, the time of descent through AN will be to the time of descent through CO in the subduplicate ratio of AN to CO: but the times of descent through the arcs AN and CO are equal to half the times of vibration of the pendulums PN, PO, respectively. Hence the time of vibration

of the pendulum PN, in the arch AB, is to the time of vibration of the pendulum PO in the similar arc CD in the subduplicate ratio of AN to CO: and since the radii PN, PO, are proportional to the similar arcs AN, CO, therefore the time of vibration of the pendulum PN will be to the time of vibration of the pendulum PO in a subduplicate ratio of PN to PO. If the length of a pendulum vibrating seconds be 39.174 inches, then the length of a pendulum vibrating half seconds will be 9.793 inches. For $1'' : \frac{1}{2}'' :: \sqrt{39.174} : \sqrt{x}$; and $1 : \frac{1}{2} :: 39.174 : x$. Hence $x = \frac{39.174}{4} = 9.793$.

PROP. VI.—The length of pendulums vibrating in the same time, in different places, will be as the forces of gravity. For the velocity generated in any given time is directly as the force of gravity, and inversely as the quantity of matter. Now, the matter being supposed the same in both pendulums, the velocity is as the force of gravity; and the space passed through in a given time will be as the velocity; that is, as the gravity. Cor. Since the length of pendulums vibrating in the same time in small arcs are as the gravitating forces, and as gravity increases with the latitude on account of the spheroidal figure of the earth and its rotation about its axis; hence the length of a pendulum vibrating in a given time will be variable with the latitude, and the same pendulum will vibrate slower the nearer it is carried to the equator.

PROP. VII.—The time of vibrations of pendulums of the same length, acted upon by different forces of gravity, are reciprocally as the square roots of the forces. For, when the matter is given, the velocity is as the force and time; and the space described by any given force, is as the force and square of the time. Hence the lengths of pendulums are as the forces and the squares of the times of falling through them. But these times are in a given ratio to the times of vibration; whence the lengths of pendulums are as the forces and the squares of the times of vibration. Therefore, when the lengths are given, the forces will be reciprocally as the square of the times, and the times of vibration reciprocally as the square roots of the forces. Cor. Let p = length of pendulum, g = force of gravity, and t = time of vibration. Then since $p = g \times t^2$.

Hence $g = p \times \frac{1}{t^2}$; and $t = \sqrt{p \times \frac{1}{g}}$. That

is, the forces in different places are directly as the lengths of the pendulums, and inversely as the square roots of the times of vibration; and the times of vibration are directly as the square roots of the lengths of the pendulums, and inversely as the square roots of the gravitating forces.

PROP. VIII.—A pendulum which vibrates in the arch of a cycloid describes the greatest and least vibrations in the same time. This property is demonstrated only on a supposition that the whole mass of the pendulum is concentrated in a point: but this cannot take place in any really vibrating body; and, when the pendulum is of finite magnitude, there is no point given in posi-

tion which determines the length of the pendulum; on the contrary the centre of oscillation will not occupy the same place in the given body, when describing different parts of the tract it moves through, but will continually be moved in respect of the pendulum itself during its vibration. This circumstance has prevented any general determination of the time of vibration in a cycloidal arc, except in the imaginary case referred to. There are many other obstacles which concur in rendering the application of this curve to the vibration of pendulums designed for the measures of time the source of errors far greater than those which by its peculiar property it is intended to obviate; and it is now wholly disused in practice. Although the times of vibration of a pendulum in different arches be nearly equal, yet, from what has been said, it will appear that, if the ratio of the least of these arches to the greatest be considerable, the vibrations will be performed in different times; and the difference, though small, will become sensible in the course of one or more days. In clocks used for astronomical purposes it will therefore be necessary to observe the arc of vibration; which if different from that described by the pendulum when the clock keeps time, there a correction must be applied to the time shown by the clock. This correction, expressed in seconds of time, will be equal to the half of three times the difference of the square of the given arc, and of that of the arc described by the pendulum when the clock keeps time, these arcs being expressed in degrees; and so much will the clock gain or lose according as the first of these arches is less or greater than the second. Thus, if the clock keeps time when the pendulum vibrates in an arch of 3° , it will lose $10\frac{1}{4}''$ daily in an arch of 4° . For $4^2 - 3^2 \times \frac{1}{2} = 7 \times \frac{1}{2} = 10\frac{1}{4}''$. The length of a pendulum rod increases with heat; and the quantity of expansion answering to any given degree of heat is experimentally found by means of a pyrometer (see PYROMETER); but the degree of heat at any given time is shown by a thermometer: hence that instrument should be placed within the clock-case at a height nearly equal to that of the middle of the pendulum; and its height, for this purpose, should be examined at least once a day. Now, by a table constructed to exhibit the daily quantity of acceleration or retardation of the clock, answering to every probable height of the thermometer, the corresponding correction may be obtained. It is also necessary to observe that the mean height of the thermometer during the interval ought to be used. In Six's thermometer this height may be easily obtained; but in the thermometers of the common construction it will be more difficult to find this mean. It has been found, by repeated experiments, that a brass rod equal in length to a second pendulum will expand or contract one 1000th part of an inch by a change of temperature of 1° in Fahrenheit's thermometer; and, since the times of vibration are in a subduplicate ratio of the lengths of the pendulum, hence an expansion or contraction of one 1000th part of an inch will answer nearly to $1''$ daily; therefore a change of 1° in the thermometer will occasion a difference in the rate of the clock

equal to 1" daily. Whence, if the clock be so adjusted as to keep time when the thermometer is at 55°, it will lose 10" daily when the thermometer is at 65°, and gain as much when it is at 45°. Hence the daily variation of the rate of the clock from summer to winter will be very considerable. It is true indeed that most pendulums have a nut or regulator at the lower end, by which the bob may be raised or lowered a determinate quantity: and therefore, while the height of the thermometer is the same, the rate of the clock will be uniform. But since the state of the weather is ever variable, and as it is impossible to be raising or lowering the bob of the pendulum at every change of the thermometer, therefore the correction formerly mentioned is to be applied. This correction, however, is in some measure liable to a small degree of uncertainty; and, in order to avoid it altogether, several contrivances have been proposed, by constructing a pendulum of different materials, and so disposing them that their effects may be in opposite directions, and thereby counterbalance each other; and thus the pendulum will continue of the same length.

PENDULUM, ANGULAR, is formed of two pieces or legs like a sector, and is suspended by the angular point. This pendulum was invented with a view to diminish the length of the common pendulum, but at the same time to preserve or even increase the time of vibration. In this pendulum, the time of vibration depends on the length of the legs, and on the angle contained between them conjointly, the duration of the time of vibration increasing with the angle. Hence a pendulum of this construction may be made to oscillate in any given time. At the lower extremity of each leg of the pendulum is a ball or bob as usual. It may be easily shown, that, in this kind of a pendulum, the squares of the times of vibration are as the secants of half the angle contained by the legs: hence, if a pendulum of this construction vibrates half seconds when its legs are close, it will vibrate whole seconds when the legs are opened, so as to contain an angle equal to 151° 2' 30".

PENDULUM, CONICAL, or circular, is so called from the figure described by the string or ball of the pendulum. This pendulum was invented by Mr. Huygens, and also claimed by Dr. Hook. To understand its principles it will be necessary to premise the following lemma, viz. the times of all the circular revolutions of a heavy globular body, revolving within an inverted hollow paraboloid, will be equal, whatever be the radii of the circles described by that body. To construct the pendulum, therefore, so that its ball may always describe its revolutions in a paraboloid surface, it will be necessary that the rod of the pendulum be flexible, and that it be suspended in such a manner as to form the evolute of the given parabola. Hence, let KH (fig. 9) be an axis perpendicular to the horizon, having a pinnion at K moved by the last wheel in the train of the clock; and a hardened steel point at H moving in an agate pivot, to render the motion as free as possible. Now, let it be required that the pendulum shall perform each revolution in a second; then the paraboloid surface it moves in must be such whose latus rectum is double the

length of the common half second pendulum. Let O be the focus of the parabola MEC, and MC the latus rectum; and make $AE = MO = \frac{1}{2} MC$ = the length of a common half second pendulum. At the point A of the verge let a thin plate AB be fixed at one end, and at the other end B let it be fastened to a bar or arm BD perpendicular to DH, and to which it is fixed at the point D. The figure of the plate AB is that of the evolute of the given parabola MEC. The equation of this evolute, being also that of the semicubical parabola, is $\frac{27}{16} p x^2 = y^3$.

—Let $\frac{27}{16} p = P$; then $P x^2 = y^3$, and in the focus $P = 2y$. In this case $2x^2 = y^3 = \frac{1}{2} P^3$: hence $x^2 = \frac{1}{4} P^3$, and $x = P\sqrt{\frac{1}{4}} = \frac{27}{16} p\sqrt{\frac{1}{4}}$ = the

distance of the focus from the vertex A.—By assuming the value of x , the ordinates of the curve may be found; and hence it may be easily drawn. The string of the pendulum must be of such a length that, when one end is fixed at B, it may lie over the plate AB, and then hang perpendicular from it, so that the centre of the bob may be at E when at rest. Now, the verge KH being put in motion, the ball of the pendulum will begin to gyrate, and thereby contrive a centrifugal force which will carry it out from the axis to some point F, where it will circulate seconds or half seconds, according as the line AE is 9·8 inches, or two inches and a quarter, and AB answerable to it. One advantage possessed by a clock having a pendulum of this construction is, that the second hand moves in a regular and uniform manner, without being subject to those jerks or starts as in common clocks; and the pendulum is entirely silent.

PENDULUM, FIR. The expansion or contraction of straight-grained fir wood lengthwise, by change of temperature, is so small that it is found to make very good pendulum rods. The wood called sapadillo is said to be still better. There is good reason to believe that the previous baking, varnishing, gilding, or soaking of these woods in any melted matter, only tends to impair the property that renders them valuable. They should be simply rubbed on the outside with wax and a cloth. In pendulums of this construction the error is greatly diminished, but not taken away.

PENDULUM, GRIDIRON, or Harrison's, is an ingenious contrivance for the purpose above-mentioned. Instead of one rod, this pendulum is composed of any convenient odd number of rods, as five, seven, or nine; being so connected that the effect of one set of them counteracts that of the other set; and therefore, if they are properly adjusted to each other, the centres of suspension and oscillation will always be equidistant. Fig. 7 represents a gridiron pendulum composed of nine rods, steel and brass alternately. The two outer rods, A B, C D, which are of steel, are fastened to the cross pieces A C, B D, by means of pins. The next two rods, E F, G H, are of brass, and are fastened to the lower bar BD, and to the second upper bar E G. The two following rods are of steel, and are fastened to the cross

bars E G and I K. The two rods adjacent to the central rod, being of brass, are fastened to the cross pieces I K and L M; and the central rod, to which the ball of the pendulum is attached, is suspended from the cross piece L M, and passes freely through a perforation in each of the cross bars I K, B D. From this disposition of the rods, it is evident that, by the expansion of the extreme rods, the cross piece B D, and the two rods attached to it, will descend: but, since these rods are expanded by the same heat, the cross piece E G will consequently be raised, and therefore also the two next rods; but, because these rods are also expanded, the cross bar I K will descend; and, by the expansion of the two next rods, the piece L M will be raised a quantity sufficient to counteract the expansion of the central rod. Whence it is obvious that the effect of the steel rods is to increase the length of the pendulum in hot weather, and to diminish it in cold weather, and that the brass rods have a contrary effect upon the pendulum. The effect of the brass rods must, however, be equivalent, not only to that of the steel rods, but also to the part above the frame and spring, which connects it with the clock, and to that part between the lower part of the frame and the centre of the ball.

PENDULUM, MERCURIAL, was invented by the celebrated Mr. George Graham, and is considered as the compensating pendulum. In this the rod of the pendulum is a hollow tube, in which a sufficient quantity of mercury is put. Mr. Graham first used a glass tube, and the clock to which it was applied was placed in the most exposed part of the house. It was kept constantly going, without having the hands or pendulum altered, from the 9th of June 1722 to the 14th of October 1725, and its rate was determined by transits of fixed stars. Another clock made with extraordinary care, having a pendulum about sixty pounds weight, and not vibrating above $1^{\circ} 30'$ from the perpendicular, was placed beside the former, the more readily to compare them with each other, and that they might both be equally exposed. The result of all the observations was this, that the irregularity of the clock with the quicksilver pendulum exceeded not, when greatest, a sixth part of that of the other clock with the common pendulum, but for the greatest part of the year not above an eighth or ninth part; and even this quantity would have been lessened, had the column of mercury been a little shorter: for it differed a little the contrary way from the other clock, going faster with heat and slower with cold. To confirm this experiment more, about the beginning of July 1723 Mr. Graham took off the heavy pendulum from the other clock, and made another with mercury, but with this difference, that instead of a glass tube he used a brass one, and varnished the inside to secure it from being injured by the mercury. This pendulum he used afterwards, and found it about the same degree of exactness as the other.

M. Thiout's Pendulum.—Another excellent contrivance for the same purpose is described by M. Thiout, a French author on clock-making. Of this pendulum, somewhat improved by Mr. Crosthwaite, watch and clock maker, Dublin, we

have the following description in the Transactions of the Royal Irish Academy, 1788:—‘A and B, fig. 8, are two rods of steel forged out of the same bar, at the same time, of the same temper, and in every respect similar. On the top of B is formed a gibbet C; this rod is firmly supported by a steel bracket D, fixed on a large piece of marble E, firmly set into the wall F, and having liberty to move freely upwards between cross staples of brass, 1, 2, 3, 4, which touch only in a point in front and rear (the staples having been carefully formed for that purpose); to the other rod is firmly fixed by its centre the lens G, of twenty-four pounds weight, although it should in strictness be a little below it. This pendulum is suspended by a short steel spring on the gibbet at C; all which is entirely independent of the clock. To the back of the clock-plate I are firmly screwed two cheeks nearly cycloidal at K, exactly in a line with the centre of the verge L. The maintaining power is applied by a cylindrical steel stud, in the usual way of regulators, at M. Now it is very evident that any expansion or contraction that takes place in either of these exactly similar rods is instantly counteracted by the other; whereas in all compensation pendulums composed of different materials, however just calculation may seem to be, that can never be the case, as not only different metals, but also different bars of the same metal that are not manufactured at the same time, and exactly in the same manner, are found by a good pyrometer to differ materially in their degrees of expansion and contraction, a very small change affecting one and not the other.’ Theory has pointed out several other pendulums, known by the names of elliptic, horizontal, rotulary, &c., pendulums. We can only select two or three of the more modern inventions of this kind.

Elliott's compensating pendulum.—The adjustment of the rods for the temperature in the Grid-iron pendulum of Harrison being found in convenient, and accompanied sometimes by a considerable change in the rate: in the pendulum of Elliott two levers are adopted instead of one, and they are applied at the bob instead of at the superior end of the verge.

Fig. 1, plate II., PENDULUMS, represents this pendulum; *ab* is a bar of brass made quite fast at the upper end by pins, and held contiguous at several equal distances, by the screws, 1, 2, &c., to the rod of the pendulum, which is a bar of iron; and, so far as the brass bar reaches, is filed of the same size and shape, though it does not appear so in the figure, but, a little below the end of the brass, the iron is left broader, as at *dd*, for the convenience of fixing the work to it, and is made of a sufficient length to pass quite through the ball of the pendulum to *c*. The holes 1, 2, &c., in the brass, through which the screws pass into the iron rod of the pendulum, are filed of a sufficient length to suffer the brass to contract and dilate freely by heat and cold under the heads of the screws: *eeee* represent the ball of the pendulum; *ff*, two strong pieces of steel, or levers, whose inner centres, or pivots, turn in two holes drilled in the broad part of the pendulum rod, and their outer ones in a strong

Fig. 1.



Fig. 2.



Fig. 3.

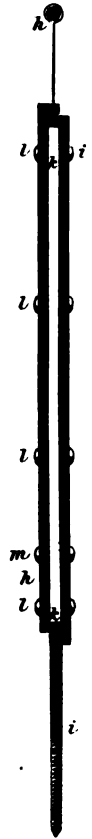


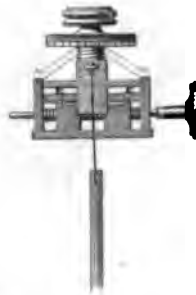
Fig. 4.



Fig. 5.



Fig. 6.



bridge, or cock, screwed upon the same part of the rod, but omitted in the figure, to show the mechanism: g, g , are two screws entering at the edges, and reaching into the cavity near the centre of the ball. The ends of the screws next the centre are turned into the form seen in the figure, which, pressing with the weight of the ball against the longer arms of the levers, cause the short ends to press against the brass bar at b . Let us now suppose that the rod of the pendulum, and the brass annexed to it, grow longer by heat, and that the brass lengthens more than the iron of the same length; then the brass, by the excess of its dilation, will press the short ends of the levers downwards at b , and at the same time necessarily lift up the ball, which rests on the long ends of the same lever, at f, f , to any proportion necessary for due compensations. The calculated proportion of the short arms of the levers must be to the long ones as the excess in the expansion of brass is to that of the whole length of iron; and, if this calculation be found on trial not perfectly accurate, the side screws g, g , will produce the exact compensation at a few adjustments. At i, k , the inferior end of the iron verge, a strong double spring is fixed to bear the major part of the ball's weight, by its pressure upwards against two points of the ball, equidistant from the vertical line. This is the description of the first pendulum made in this way; and the only alteration that the inventor made afterwards was placing the side screws in the body of the ball. Cumming proposes, in his *Elements of Clock and Watch-work*, that the brass bar should elongate between two iron bars, in order to keep it straight, and to prevent the jerks to which he conceives the foregoing construction liable: he proposes also to alter the structure of the short arms of the levers, by making them turn each on an axis of motion, and to change their places of pressure mutually, in order that their united action may be applied in the same point, at the centre of the brass bar, in direct opposition to the line of downward expansion. See his *Elements*, p. 106, and plate xi. Mr. Hardy of Clerkenwell has also improved considerably Elliott's pendulum.

Mr. Troughton's mercurial pendulum.—This is an improvement on Graham's mercurial pendulum. About the year 1790 Mr. Edward Troughton, with a view of doing away the most material prejudice against this useful instrument, contrived a modification of the mercurial pendulum, which must be considered as a distinct invention; the materials being differently arranged both as to quality, quantity, and situation. The prejudice alluded to was that the metallic rod of Graham, and the vessel of mercury, would not be affected by changes of temperature in a contemporaneous manner, but that the mercury being below the rod, and having on that account a quicker motion, would cool sooner than the metallic rod, and be liable to more frequent changes from its greater susceptibility. Mr. Troughton therefore substituted a strong glass tube with a bulb at the lower extremity, to be filled to a certain height with mercury, which should rise and fall precisely as in a thermome-

ter which instrument, in fact, his tube is; and, to make it useful as such, it carries a graduated scale. The tube in question is about the size of a barometer tube, and the bulb large enough to contain forty-five ounces of pure mercury by the aid of one-half the tube. Fig. 2 of plate II. exhibits Mr. Troughton's arrangement. A B is the mercurial rod filled with mercury to the middle point of the rod; C D the bulb guarded by the surrounding lenticular bob of brass and lead made in the usual way, except that it is hollow in the centre: the metallic parts of the pendulum weigh about nine pounds exclusively of the mercury; the rim that surrounds the bulb, and by which the weight of the lenticular bob is supported, projects into two notches cut in the interior edges of the metallic lens, at each side of the cavity, and the nice fitting of the bulb to its rim renders the glass capable of bearing the weight of metal supported by it. The compensation of this pendulum is effected entirely by the ascent and descent, alternately, of the mercury up and down the glass tube as the heat varies; and as the expansion of glass varies much less than that of any of the metals, the small column of mercury contained in the tube is found sufficient to answer its purpose completely after a trial of more than twenty years.

Ward's compensation pendulum.—This is an invention of Mr. Henry Ward, of Blandford in Dorsetshire, who, in March 1806, communicated it to the Society of Arts, accompanied by a model, which gained him the silver medal of the society. It consists of three bars, two of iron and one of zinc, arranged in a manner very similar to Deparcieux's improvement of Regnault's old French pendulum, but without the adjustment lever. The instrument appears in fig. 3, plate II., where h, h and i, i are two flat rods of iron or steel, about half an inch wide and an eighth of an inch thick each; and k, k is a rod of zinc, of nearly a quarter of an inch thick, interposed; the two extreme or iron rods are cranked, one at the top to receive the suspension spring, and the other at the bottom to hold the ball in the same vertical line with the zinc rod. These three parallel rods are united by four screws, l, l, l, l , which, passing through oblong holes in the bars h, h and k, k , screw into the rod i, i , while the rod h, h is fastened to the zinc one k, k , by the single screw m near its lower extremity, which screw is the screw of adjustment for temperature, and requires several holes to be made in the bar h, h , and also in k, k , that the length of the zinc bar may be limited to its due proportion for exact compensation. The iron bar i, i rests by a chimpiece on the upper end of the zinc bar, and therefore the ball supported by its lower tapped end stretches all the bars equally. If the zinc bar had rested on the crank at the bottom of the bar h, h , instead of being held by the screw m , the arrangement would have been the same as in Deparcieux's, but with zinc substituted for brass, which consequently does not require the aid of a lever to increase its effect. The proportional expansions of zinc and iron were taken for this pendulum from Smeaton's table in the forty-eighth volume of the *Phil. Trans.* of London, and were made for hammered zinc as 373 : 151; but subsequent observations on the rate of the clock,

to which the pendulum was applied, proved that the expansion of the hammered zinc was greater than Smeaton's table gives it, though the quantity was within the reach of the adjustment.

Reid's compensation pendulum.—Another compensation pendulum by Mr. Adam Reid of Woolwich was also presented to the Society of Arts in April 1809, and the inventor was rewarded with fifteen guineas for his contrivance. This is given in fig. 4, plate II., and has its compensation of a tube of zinc acting on the ball from the lower end of the steel verge thus: A B is the steel verge, made a little thicker where it enters the ball C, and also of a lozenge shape, to prevent the ball's turning, but above and below it is cylindrical; near the centre of the ball is a shoulder in the verge, against which the upper end of the zinc tube D presses the cross piece of the ball when the nut E is turned up close to its lower extremity, but when the nut is turned back, in adjusting for rate, the tube descends a little, and the ball with it, while it rests on the upper extremity of the tube. When the compensation is too much the tube may be shortened till it is found of the exact length, by a trial of the rate in extremes of temperature. In the figure the length of the zinc tube does not appear sufficiently long to compensate an entire verge of steel. The inventor observes that platinum might be substituted for steel, and steel for zinc, for the formation of this kind of pendulum, but that the expense would be enhanced by the dearness of platinum.

Ritchie's and Nicholson's compensation pendulum.—In March 1812 Mr. David Ritchie, of Clerkenwell, laid before the society a model of a compensation pendulum, for which he received twenty guineas. The compensation was effected by the flexure of two compound horizontal bars interposed between the verge and the ball, which act on the same principle as the compound bars in the ordinary compensation balances of a chronometer. Fig. 5 represents the pendulum, in which A is the spring of suspension, B the ball, and C the steel verge as usual, with the nut of adjustment for rate at E, below the ball. The compensating bars are F and G, the upper part of F and the lower part of G being steel, and the other parts brass; so that any additional heat may bring the bars nearer together by the convexity of the brass faces of the compound bars being contiguous. These compound bars have each a sliding piece above and below, and *f* respectively, by the sliding of which the bars may have their effective lengths altered, in the adjustment for temperature; and are connected by the slender springs *e* and *f*, which bear a portion of the ball's weight; the remainder being borne by the springs *l* and *m* attached by screws at *h*, one to the verge piece *d* and the other to the ball piece *b*, while they themselves are united by screws at *l* and *m*. The compensation frame, so constructed, is adjusted by sliding the compound bars, before they are fixed, till the centre of the ball falls in the vertical line of the verge, where the screws at *h* fix it for trial. It has been feared that when the crutch of the clock urges the verge the ball will not move with it till the springs *e* and *f* are bent a little; for when the

ball is heavy, as is now customary in seconds' pendulums, its weight will place a great stress on the slender springs that connect it with the verge, and produce, probably, a vacillation, as in Doughty's, that must be very unfavorable to isochronism, allowing even that the compensation is perfect. To avoid this evil Mr. Nicholson placed a similar compensation bar on the cock of suspension above the verge of his pendulum, and also above the cock of limitation, as seen in fig. 6, but without any spring, and in this situation the varying curvature of the horizontal compound bar, E E, altering the length of the suspension spring, produced the alternate rising and falling of the ball, as the verge carried it in an opposite direction, so that the centre of oscillation was comparatively stationary. See Phil. Journal, vol. i. 4to. ed., plate V. fig. 3. The same author also contrived a compensation pendulum composed of four rods of steel and one of a compound, or alloy, of zinc and silver, which is described in vol. ii. of his 4to. Phil. Journal, p. 205, plate IX.

PENELOPE, in fabulous history, the daughter of Icarus, who married Ulysses, by whom she had Telemachus. During the absence of Ulysses, who was gone to the siege of Troy, and who staid twenty years from his dominions, several princes, charmed with Penelope's beauty, told her that Ulysses was dead, offered to marry her, and pressed her to declare in their favor. She promised compliance on condition they would give her time to finish a piece of tapestry she was weaving; but at the same time she undid in the night what she had done in the day, and thus eluded their importunity until Ulysses's return.

PENELOPE, in ornithology, a genus of birds of the order of gallinæ, the characters of which are these: The beak is bare at the base; the head is covered with feathers; the neck is quite bare; the tail consists of twelve principal feathers; and the feet are for the most part bare. Linné, in his *Systema Nature*, enumerates six species.

1. *P. crax cumanensis*, called by Latham, &c., yacou. It is bigger than a common fowl. The bill is black; the head feathers are long, pointed, and form a crest, which can be erected at pleasure. The irides are of a pale rufous color; the space round the eye is naked, similar to that of a turkey. It has also a naked membrane or kind of wattle, of a dull black color. The blue skin comes forward on the bill, but is not liable to change color like that of the turkey. The plumage has not much variation; it is chiefly brown, with some white markings on the neck, breast, wing coverts, and belly; the tail is composed of twelve feathers, pretty long, and even at the end; the legs are red. This species inhabits Cayenne, but is a very rare bird, being met with only in the inner parts, or about the Amazon's country, though in much greater plenty up the river Oyapoc, especially towards Camoupi; and indeed those which are seen at Cayenne are mostly tame ones; for it is a familiar bird, and will breed in that state, and mix with other poultry. It makes the nest on the ground, and hatches the young there, but is at other times mostly seen on trees. It frequently erects the

crest, when pleased or taken notice of, and likewise spreads the tail upright like a fan, in the manner of the turkey. It has two kinds of cry; one like that of a young turkey, the other lower and more plaintive; the first of these is thought by the Indians to express the word *couyovoit*, the other *yacou*.

2. *P. maralia*, the marail, about the size of a fowl, and shaped somewhat like it. The bill and irides are blackish; the space round the eye is bare, and of a pale red; the chin, throat, and fore part of the neck are scarcely covered with feathers; but the throat itself is bare, and the membrane elongated to half an inch or more; both this and the skin round the eyes change color, and become deeper and thicker when the bird is irritated. The head feathers are longish, so as to appear like a crest when raised up, which the bird often does when agitated; at which time it also erects those of the whole body; and so disfigures itself as to be scarcely known. The general color of the plumage is a greenish black; the fore part of the neck is tipped with white; the wings are short; the tail is long, consisting of twelve feathers, which are even at the end, and commonly pendent, but can be lifted up, and spread out like that of the turkey; the legs and toes are of a bright red; the claws are crooked, and somewhat sharp. In a collection, says Latham, from Cayenne was a bird, I believe, of this very species. It was twenty-eight inches long; the bill is like that of a fowl, brown, and rather hooked; round the eyes bare; the head is crested; the feathers of the fore part of the neck are tipped with white; the breast and belly are rufous brown; the rest of the plumage is greenish brown; the tail is eleven inches long, and rounded at the end; the quills just reach beyond the rump; the legs are brown, and the claws hooked. This species is common in the woods of Guiana, at a distance from the sea, though it is less known than could be imagined; and generally found in small flocks, except in breeding time, when it is only seen by pairs, and then frequently on the ground, or on low shrubs; at other times on high trees, where it roosts at night. The female makes her nest on some low bushy trees as near the trunk as possible, and lays three or four eggs. When the young are hatched, they descend with their mother, after ten or twelve days. The mother acts as other fowls, scratching on the ground like a hen, and brooding the young, which quit their nurse the moment they can shift for themselves. They have two broods in a year; one in December or January, the other in May or June. The best time of finding these birds is morning or evening, being then met with on such high trees whose fruit they feed on, and are discovered by some of it falling to the ground. The young birds are easily tamed, and seldom forsake the places where they have been brought up: they need not be housed, as they prefer the roosting on tall trees to any other place. Their cry is inharmonious, except when irritated or wounded, when it is harsh and loud. Their flesh is much esteemed. Buffon supposes this bird to be the female of the *yacou*, or at least a variety; but that this cannot be, the anatomical inspection will at once determine. The windpipe of this

bird has a singular construction, passing along the neck to the entrance of the breast, where it arises on the outside of the flesh, and after going a little way downwards, returns, and, then passes into the cavity of the lungs. It is kept in its place on the outside by a muscular ligament, which is perceivable quite to the breast bone. This is found to be the case in both male and female, and plainly proves that it differs from the *yacou*, whose wind-pipe has no such circumvolution in either sex. If this be the bird mentioned by Fermin, in his History of Guiana, p. 176, he says that the crest is cuneiform, and of a black and white color; and observes that they are scarce at Surinam; but it does not seem quite certain whether he means this species or the *yacou*. Bancroft mentions a bird of Guiana by the name of *marrodée*, which he says is wholly of a brownish-black: the bill the same; and the legs gray. These he says are common, and make a noise not unlike the name given it, perching on trees. The Indians imitate their cry so exactly as to lead to the discovery of the place the birds are in, by their answering it. The flesh of them is like that of a fowl: it is therefore most likely the marail.

3. *P. meleagris cristata*, called by Ray *pene-lope jacupeme*, and by Edwards the *guan*, or *quan*, is about the size of a fowl, being about two feet six inches long. The bill is two inches long, and of a black color; the irides are of a dirty orange color; the sides of the head are covered with a naked purplish blue skin, in which the eyes are placed: beneath the throat, for an inch and a half, the skin is loose, of a fine red color, and covered only with a few hairs. The top of the head is furnished with long feathers, which the bird can erect as a crest at pleasure; the general color of the plumage is brownish black, glossed over with copper in some lights; but the wing coverts have a greenish and violet gloss. The quills mostly incline to a purple color; the fore part of the neck, breast, and belly, are marked with white spots; the thighs, under tail coverts, and the tail itself, are brownish black; the legs are red; the claws black. Some of these birds have little or no crest, and are thence supposed to be females. They inhabit Brasil and Guiana, where they are often made tame. They frequently make a noise not unlike the word *jacu*. Their flesh is much esteemed.

4. *P. meleagris satyra*, the horned pheasant. Latham calls it the horned turkey. This species is larger than a fowl, and smaller than a turkey. The color of the bill is brown; the nostrils, forehead, and space round the eyes are covered with slender black hairy feathers; the top of the head is red. Behind each eye there is a fleshy callous blue substance like a horn, which tends backward. On the fore part of the neck and throat there is a loose flap of a fine blue color, marked with orange spots, the lower part of which is beset with a few hairs; down the middle it is somewhat looser than on the sides, being wrinkled. The breast and upper part of the back are of a full red color. The neck and breast are inclined to yellow. The other parts of the plumage and tail are of a rufous brown, marked all over with white spots, encompassed with black. The legs

are somewhat white, and furnished with a spur behind each. A head of this bird, Mr. Latham tells us, was sent to Dr. Mead from Bengal, together with a drawing of the bird, which was called anpaul pheasant. It is a native of Bengal.

5. *P. pipile*, or *craz pipile*, black in the belly, and the back brown, stained with black. The flesh on the neck is of a green color. It is about the bigness of the yacou, and has a hissing noise. The head is partly black and partly white, and is adorned with a short crest. The space about the eyes, which are black, is white; the feet are red. It inhabits Guiana.

6. *P. vociferans*, the vociferating penelope. The bill of this bird is of a greenish color; the back is brown, the breast green, and the belly is of a whitish brown. Latham calls it the crying curassaw. It is about the bigness of a crow.

PENESTICA, a town of the Helvetii, between Lacus Lausonius and Salodurum; called *Petenisca* by Peutinger; thought now to be Biel, the capital of a small territory in Switzerland.—Antonine. Cluverius.

PENETRALE, a sacred room or chapel in private houses, which was set apart for the worship of the household gods among the ancient Romans. In temples also there were *penetralia*, or apartments of distinguished sanctity, where the images of the gods were kept, and certain solemn ceremonies performed.

PENETRATE, *v. a. & v. n.*

PENETRABLE, *adj.*

PENETRABILITY, *n. s.*

PENETRAILS,

PENETRANCY,

PENETRANT, *adj.*

PENETRATION, *n. s.*

PENETRATIVE, *adj.*

to affect the mind or feelings; to make way mentally or otherwise: penetrable is, susceptible of being pierced, or of mental impression; sympathetic: penetrability, the corresponding noun-substantive: penetrails, an obsolete word for the interior parts of the body: penetrant, having power to pierce or enter; sharp, subtle, prevailing: penetrative is synonymous with penetrant: penetration, the act of entering a body; mental entrance, acuteness, or subtlety.

Peace!

And let me wring your heart, for so I shall,

If it be made of penetrable stuff. *Shakespeare.*

Wouldst thou see

Thy master thus with pleacht arms, bending down
His corrugible neck, his face subdued

To penetrative shame? *Id.*

Let not air be too gross, nor too penetrative, nor
subject to any foggy noisomeness from fens. *Wotton.*

It warms

The universe, and to each inward part,
With gentle penetration, though unseen,
Shoots invisible virtue even to the deep. *Milton.*

If the operation of these salts be in convenient
glasses promoted by warmth, the ascending steams
may easily be caught and reduced into a penetrant
spirit. *Boyle.*

Let him try thy dart,

And pierce his only penetrable part. *Dryden.*

If we reach no farther than metaphor, we
rather fancy than know, and are not yet penetrated
into the inside and reality of the thing. *Locke.*

The subtlety, activity, and penetrancy of its effluvia
no obstacle can stop or repel, but they will make
their way through all bodies. *Ray.*

The food, mingled with some dissolvent juices, is
evacuated into the intestines, where it is further sub-
tilized and rendered so fluid and penetrant that the
finer part finds its way in at the straight orifices of
the lacteous veins. *Id.*

There shall we clearly see the uses of these
things which here were too subtle for us to pen-
etrate. *Id.*

Marrow is of all other oily substances, the most pe-
netrate. *Arbuthnot on Aliments.*

There being no mean between penetrability and
impenetrability, passivity and activity, they being
contrary; therefore the infinite rarefaction of the
one quality is the position of its contrary. *Cheyne.*

Court virtues bear, like gems, the highest rate,
Born where heaven's influence scarce can penetrate:
Though the same sun with all diffusive rays
Smile in the rose, and in the diamond blaze,
We praise the stronger effort of his power,
And always set the gem above the flower. *Pope.*

O thou, whose penetrative wisdom found
The south sea rocks and shelves, where thousands
drowned. *Swift's Miscellanies.*

The heart resists purulent fumes, into whose pe-
netrails to insinuate some time must be allowed. *Harvey.*

A penetration into the abstruse difficulties and
depths of modern algebra and fluxions is not worth
the labor of those who design either of the three
learned professions. *Watts.*

PEN'GUIN, *n. s.* See **PINGUIN**. A bird.
This bird was found with this name, as is sup-
posed, by the first discoverers of America; and
penguin signifying in Welsh a white head, and
the head of this fowl being white, it has been
imagined that America was peopled from Wales;
whence Hudibras:—

British Indians named from penguins.

Also a fruit.

The penguin is so called from his extraordinary
fatness: for, though he be no higher than a large
goose, yet he weighs sometimes sixteen pounds; his
wings are extremely short and little, altogether un-
useful for flight, but by the help whereof he swims
very swiftly. *Grew's Museum.*

The penguin is very common in the West Indies,
where the juice of its fruit is often put into punch,
being of a sharp acid flavour: there is also a wine
made of the juice of this fruit, but it will not keep
good long. *Miller.*

PENGUIN, in botany (sect. I. Def. 2), or wild
ananas, is a species of bromelia. See **BROMELIA**.

PENICHE, a fortified town of Portugal, on a
peninsula in the Atlantic, surrounded by rocks.
It has a harbour defended by a fort. In 1589
this town was taken by the English under Sir
Francis Drake. Inhabitants 2800. Forty-eight
miles N. N. W. of Lisbon. Long. 9° 23' 56" W.,
lat. 39° 21' 48" N.

PENICILLUS, among surgeons, is used for a
tent to be put into wounds or ulcers.

PENIEL, or **PENUEL**, a city beyond Jordan,
near the ford or brook Jabbok, where Jacob
wrestled with an angel. See Gen. xxxii. 24, &c.
The city built afterwards in this place was given
to the tribe of Gad. Gideon, returning from the

pursuit of the Medianites, overthrew the tower of Peniel (Judges viii. 17), and put all the men of the city to death, for having refused bread to him and his people, and having answered him in a very insulting manner. Jeroboam I. rebuilt Peniel (1 Kings xii. 25); and Josephus says that he built a palace in it.

PENJINSKAJA, a gulf of Eastern Siberia, forming the northern part of the bay of Okhotsk. It extends a considerable distance inland, and receives the Penjine River.

PENINGTON (Isaac), a celebrated English Quaker, born in 1617. He was an early convert of George Fox; and both preached and wrote in defence of his system. Under the persecuting spirit of that age, he was several times imprisoned, although he was of a meek, quiet, and philanthropic spirit, and very much beloved. He died at Goodnestone in Sussex in 1679.

PENINNAH, the second wife of Elkanah, the father of Samuel. Her fertility, and Hannah's barrenness, are recorded in 1 Sam. i., with several interesting circumstances, which show the folly and inconvenience of polygamy.

PENINSULA, *n. s.* } *Fr. peninsula*; *Lat. penin'sulatus, adj.* } *peninsula*. A piece of land almost surrounded by the sea.

Aside of Milbrook lieth the *peninsula* of Inswork, on whose neckland standeth an ancient house.

Carow.

PENITENCE, *n. s.* } *Fr. penitence, peni-*
PEN'ITENT, *adj. & n. s.* } *tent, penitentiel, of*
PENITEN'TIAL, *adj. & n. s.* } *Lat. penitentia.*
PENITEN'TIARY, *n. s.* } Repentance; con-
PEN'ITENTLY, *adj.* } trition; sorrow for sin; repentant course of action: penitent is, sorrowful for sin; reforming or reformed; a person thus sorrowful and reformed; also one under a course of church penance or censure: penitential is expressing penitence, or enjoined as a course of discipline for sin; also a book directing such a course: penitentiary is, one who prescribes penitential rules; one who observes them; or a place where they are observed.

Much it joys me

To see you become so *penitent*. *Shakspeare.*

I have done penance for contemning love,
Whose high imperious thoughts have punished me
With bitter fasts and *penitential* groans. *Id.*

Concealed treasures shall be brought into use by the industry of converted *penitents*, whose carcasses the impartial laws shall dedicate to the worms of the earth. *Bacon.*

Upon the loss of Urbin, the duke's undoubted right, no *penitentiary*, though he had enjoined him never so straight penance to expiate his first offence, would have counselled him to have given over pursuit of his right, which he prosperously re-obtained. *Id.*

A prison restrained John Northampton's liberty, who, for abusing the same in his unruly mayoralty of London, was condemned hither as a perpetual *penitentiary*. *Carow.*

To maintain a painful fight against the law of sin is the work of the *penitentiary*. *Hammond.*

Nor in the land of their captivity

Humbled themselves, or *penitent* besought

The God of their forefathers. *Milton.*

Provoking God to raise them enemies;

From whom as oft he saves them *penitent*. *Id.*

The counterfeit Dionysius describes the practice of the church, that the catechumens and *penitents* were

admitted to the lessons and psalms, and then excluded. *Stillington.*

Death is deferred, and *penitence* has room
To mitigate, if not reverse the doom. *Dryden.*

The proud he tamed, the *penitent* he cheered,
Nor to rebuke the rich offender feared;
His preaching much, but more his practice wrought,
A living sermon of the truths he taught. *Id.*

Is it not strange, that a rational man should adore
leeks and garlick, and shed *penitential* tears at the
smell of a deified onion? *South.*

The *penitentials*, or book of penance, contained such matters as related to the imposing of penance, and the reconciliation of the person that suffered penance. *Ayliffe.*

The great *penitentiary* with his counsellors pre-
scribes the measure of penance.

Ayliffe's Perargon.

The repentance, which is formed by a grateful sense of the divine goodness towards him, is resolved on while all the appetites are in their strength: the *penitent* conquers the temptations of sin in their full force. *Rogers.*

His frown was full of terror, and his voice

Shook the delinquent with such fits of awe

As left him not, till *penitence* had won

Lost favour back again, and closed the breach.

Cowper.

PENITENCE is sometimes used for a state of repentance, and sometimes for the act of repenting. See **REPENTANCE**. It is also used for a discipline or punishment attending repentance, more usually called penance. It also gives title to several religious orders, consisting either of converted debauchees and reformed prostitutes, or of persons who devote themselves to the office of reclaiming them. Of this latter kind are these:

PENITENCE OF ST. MAGDALEN, at PARIS, CONGREGATION OF, owed its rise to the preaching of F. Tisseran, a Franciscan, who converted a number of courtizans about the year 1492. Louis, duke of Orleans, gave them his house for a monastery, or rather, as appears by their constitutions, Charles VIII. gave them the hotel called the Bochaigne, whence they were removed to St. George's chapel in 1572. By virtue of a brief of pope Alexander, Simon, bishop of Paris, in 1497, drew them up a body of statutes, and gave them the rule of St. Augustine. None were admitted who were above thirty-five years of age, and, till the beginning of the last century, none but penitents; but after its reformation by Mary Alvequin in 1616, none were admitted but maids, who, however, still retain the ancient name penitents.

PENITENCE OF ST. MAGDALEN, ORDER OF, established about the year 1272 by one Bernard, a citizen of Marseilles, who devoted himself to the work of converting the courtizans of that city. Bernard was seconded by several others, who, forming a kind of society, were at length erected into a religious order by pope Nicholas III., under the rule of St. Augustine. F. Gesnay says, that they also made a religious order of the penitents, or women they converted, giving them the same rules and observances which they themselves kept.

PENITENTS, an appellation given to certain fraternities of penitents, distinguished by the different shape and color of their habits. These are secular societies, who have their rules, statutes,

and churches, and make public processions under their particular crosses or banners. Of these there are more than 100; the chief of which are, 1. The white penitents, of which there are several different sorts at Rome, the most ancient of which was constituted in 1264: the brethren of this fraternity every year give portions to a certain number of young girls, in order to their being married: their habit is a kind of white sackcloth, and on the shoulder is a circle, in the middle of which is a red and white cross. 2. Black penitents, the chief of which are the brethren of mercy, instituted in 1488 by some Florentines, to assist criminals during their imprisonment, and at their death: on the day of execution they walk in procession before them, singing the seven penitential psalms and the litanies; and after they are dead they take them down from the gibbet and bury them: their habit is black sackcloth. There are others whose business it is to bury such persons as are found dead in the streets: these wear a death's head on one side of their habit. There are also blue, gray, red, green, and violet penitents, remarkable for little else but the different colors of their habits. Mabillon tells us that at Turin there are a set of penitents kept in pay to walk through the streets in procession, and cut their shoulders with whips, &c.

PENITENTS, or CONVERTS OF THE NAME OF JESUS, a congregation of religious at Seville in Spain, consisting of women who had led a licentious life, founded in 1550. This monastery is divided into three quarters: one for professed religious; another for novices; a third for those who are under correction. When these last give signs of a real repentance, they are removed into the quarter of the novices, where, if they do not behave themselves well, they are remanded to their correction. They observe the rules of St. Augustine.

PENITENTS OF ORVIETO are an order of nuns, instituted by Antony Simoncelli, a gentleman of Orvieto in Italy. The monastery he built was at first designed for the reception of poor girls, abandoned by their parents, and in danger of losing their virtue. In 1662 it was erected into a monastery, for the reception of such as, having abandoned themselves to impurity, were willing to consecrate themselves to God by solemn vows. Their rule is that of the Carmelites. These religious undergo no novitiate. All required is, that they continue a few months in the monastery in a secular habit, after which they are admitted to the vows.

PENITENTIARY, in the ancient Christian church, a name given to certain presbyters or priests, appointed in every church to receive the private confessions of the people, in order to facilitate public discipline, by acquainting them what sins were to be expiated by public penance, and to appoint private penance for such private crimes as were not proper to be publicly censured.

PENITENTIARY, at the court of Rome, is an office in which are examined and delivered out the secret bulls, graces, or dispensations, relating to cases of conscience, confessions, &c.

PENITENTIARY is also an officer in some cathedrals, vested with power from the bishop to absolve, in cases reserved to him. The pope has

his grand penitentiary, who is a cardinal, and the chief of the other penitentiary priests established in the church of Rome, who consult him in all difficult cases. He presides in the penitentiary, despatches dispensations, absolutions, &c., and has under him a regent and four proctors, or advocates of the sacred penitentiary.

PENK, a river of Staffordshire, which runs into the Sow, a mile below Stafford.

PENKEMAS, a cape on the west coast of Wales, and north point of Pembrokeshire, at the mouth of the Tivy, four miles below Cardigan.

PENKRIDGE, a market-town and parish of Staffordshire, situate on the river Penk, over which it has a stone bridge; four miles north-east from Brewood, and 129 north-west from London. The town is ancient, and supposed to have been the Pennocrucium of the Romans. The church has a square tower, containing five bells. Here is a charity-school for twelve boys and eight girls. Market on Tuesday. Fairs April 30th, and a great horse fair October 10th.

PENMAEN MAWR, a noted mountain of Caernarvonshire, Wales, rises abruptly from the sea to the height of 1540 feet, and its passage, on the road from Chester to Bangor and Holyhead, was extremely dangerous, until 1772, when those improvements were undertaken which have now rendered it safe, and at the same time one of the most striking and romantic roads in the kingdom. It is secured from the sea by a wall breast-high. On the summit is Braich-y-Ddinas, or the arm of the city, an ancient fortification encompassed with a strong treble wall.

PENN (Sir William), was born at Bristol in 1621, and inclined from his youth to maritime affairs. He was made captain at twenty-one years of age, rear-admiral of Ireland at twenty-three, vice-admiral of Ireland at twenty-five, admiral to the Straits at twenty-nine, vice-admiral of England at thirty-one, and general in the first Dutch war at thirty-two. Returning in 1655, he was chosen representative for the town of Weymouth; and in 1660 was made commissioner of the admiralty and navy, governor of the town and fort of Kinsale, vice-admiral of Munster, and a member of that provincial council. In 1664 he was chosen great captain commander under the duke of York, and distinguished himself in an engagement against the Dutch fleet; after which he took leave of the sea, but continued in his other employments till 1669. He died in 1670.

PENN (William), an eminent writer among the Quakers, and the founder and legislator of Pennsylvania, was the son of Sir William Penn, and was born at London in 1644. In 1660 he was entered a commoner at Christ Church in Oxford; but, having previously received an impression from the preaching of one Thomas Loe, a Quaker, withdrew with some other students from the national worship, and held private meetings, where they preached and prayed among themselves. This giving great offence to the heads of the college, Mr. Penn, though but sixteen years of age, was fined for non-conformity; and, continuing his religious exercises, was at length expelled his college. Upon his return home, he was treated with great severity by his

father, who at last turned him out of doors; but, his resentment abating, he sent him to France in company with some persons of quality; where he continued a considerable time, and returned not only well skilled in the French language, but a polite and accomplished gentleman. About 1666 his father committed to his care a considerable estate in Ireland. But being found in one of the Quakers' meetings in Cork, he, with many others, was thrown into prison: on his writing to the earl of Orrery, however, he was discharged. But his father, being informed that he still adhered to his opinions, sent for him to England, and finding him inflexible to all his arguments, turned him out of doors a second time. About 1668 he became a preacher among the Quakers; and that year was committed close prisoner to the Tower, where he wrote several treatises. Being discharged, after seven months' imprisonment, he went to Ireland, where he also preached amongst the Quakers. Returning to England, he was in 1670 committed to Newgate, for preaching in Gracechurch-street meeting-house; but, being tried at the sessions-house in the Old Bailey, he was acquitted. In September 1670 his father died; and, being perfectly reconciled to him, left him his paternal blessing and a plentiful estate. But his persecutions were not yet at an end; for, in 1671, he was committed to Newgate for preaching at a meeting-house in Wheeler-street; and during his imprisonment, which continued six months, he wrote several treatises. After his discharge, he went into Holland and Germany, and in the beginning of 1672 married, and settled with his family at Rickmansworth in Hertfordshire. The same year he published several pieces; particularly one against Reeves and Muggleton. In 1677 he again travelled into Holland and Germany to propagate his opinions; and had frequent conversations with the princess Elizabeth, daughter to the queen of Bohemia, and sister to the princess Sophia, mother to king George I. In 1681 king Charles II., in consideration of the admiral's services, and several debts due to him from the crown at his decease, granted William Penn and his heirs the province lying on the west side of the Delaware, which thence obtained the name of Pennsylvania. Upon this Penn published a brief account of that province, with the king's patent; and proposing an easy purchase of lands, and good terms of settlement for such as were inclined to remove thither, many went over. But Penn, justly considering that no European sovereign had a right to dispose of the property of other nations, however savage, without some compensation, appointed commissioners to purchase the land he had received from the king of the native Indians, and concluded a treaty with them. The city of Philadelphia was planned and built; and he himself drew up the fundamental constitutions of Pennsylvania in twenty-four articles. In 1681 he was elected F. R. S., and in 1682 he embarked for Pennsylvania, where he continued about two years, and returned in England in August 1684. Upon the accession of king James II. he was taken into a great degree of favor, which exposed him to the imputation of being a Papist; but from which he fully vindicated him-

self. However, upon the Revolution, he was examined before the council in 1688, and obliged to give security for his appearance on the first day of the next term, which was afterwards continued. He was several times discharged and examined; and at length, warrants being issued out against him, he was obliged to conceal himself for two or three years. Being at last permitted to appear before the king and council, he represented his innocence so effectually that he was acquitted. In August 1699 he, with his wife and family, embarked for Pennsylvania; whence he returned in 1701, to vindicate his proprietary right. Upon queen Anne's accession, he was in great favor, and was often at court. But, in 1707, he was involved in a law-suit with the executors of a person who had been formerly his steward; and, though many thought him aggrieved, the court of chancery did not relieve him; upon which account he was obliged to live within the rules of the Fleet for several months, till the matter was accommodated. He died in 1718. Penn's friendly and pacific manner of treating the Indians produced in them an extraordinary love for him and his people; so that they have maintained a perfect amity with the Anglo-Americans in Pennsylvania ever since. He was the greatest bulwark of the Quakers; in whose defence he wrote numberless pieces. Besides the above works, he wrote a great number of others, the most esteemed of which are:—

1. Primitive Christianity revived.
2. Defence of a paper, entitled Gospel Truths, against the Exceptions of the Bishop of Cork.
3. Persuasive to Moderation.
4. Good Advice to the Church of England, Roman Catholic, and Protestant Dissenters.
5. The Sandy Foundation shaken.
6. No Cross, no Crown.
7. The great Case of Liberty of Conscience debated.
8. The Christian Quaker, and his Testimony stated and vindicated.
9. A Discourse of the general Rule of Faith and Practice, and Judge of controversy.
10. England's present Interest considered.
11. An Address to Protestants.
12. Reflections and Maxims.
13. Advice to his Children.
14. Rise and Progress of the People called Quakers.
15. A Treatise on Oaths.

Most of these have passed through several editions, some of them many. The letters between William Penn and Dr. Tillotson, and William Penn and William Popple, Esq., together with Penn's letters to the princess Elizabeth of the Rhine, and the countess of Hornes, as also one to his wife on his going to Pennsylvania, are inserted in his works, which were first collected and published in 2 vols. folio; and the parts since selected and abridged into 1 vol. fol. are very much and deservedly admired.

PENN'S NECK, LOWER, a town of Salem county, New Jersey. Population 1163.

PENNA, in zoology. See PINNA.

PENNACHED, *adj.* Fr. *pennache*. Applied to flowers when the ground of the natural color of their leaves is radiated and diversified neatly without any confusion.

Carefully protect from violent rain your *pennached* tulips, covering them with mattresses. *Evelyn.*

PENNANT, *n. s.* Fr. *pennon*. A small flag

or ensign: also tackle for hoisting things on board ships.

PENNANT (Thomas), Esq., LL. D., F. R. S., &c., a late eminent English naturalist, born in Flintshire, in 1726, and descended of a race of ancient Britons, who had settled in that country for many centuries. He was educated successively at Wrexham, Fulham, and Oxford, where he graduated; and, having made considerable proficiency in the classics, for some time studied law. About this time a present of Willoughby's Ornithology gave him an attachment to natural history, which continued through life. After making a tour through Wales, Cornwall, and other parts of England, he travelled to the continent, and established a correspondence with several of the greatest men of the age, particularly count Buffon, Dr. Pallas, Dr. Haller, Linnæus, and Voltaire. On his return he married, and had two children; but did not succeed to the family fortune till his thirty-seventh year, when he settled at Downing. His wife dying, he made another tour to the continent; where his reputation as a man of science was now established by his British Zoology; which was published in 4 vols. 4to. so early as 1750. About 1770 he set out on his travels through Scotland; and in 1771 published a most entertaining account of that tour, in 3 vols. 4to., which passed through several editions. After this tour he penetrated to the Hebrides, and visited Man. In 1776 he married his second wife, Miss Mostyn, sister of Sir Roger Mostyn. In 1778 he commenced the publication of his Welsh Tour, in 2 vols. 4to. In 1782 he published his Journey from Chester to London, in 1 vol. 4to.; and in 1784 his Arctic Zoology, an admirable work. In 1790 he published another 4to. vol. entitled Of London; and with it a Farewell Address to the public; notwithstanding which soon after appeared his Natural History of the Parishes of Holywell and Downing; in 1 vol. 4to. And even so late as 1797, his seventy-first year, he published The View of Hindostan, a splendid work in 2 vols. 4to., with twenty-three plates, admirably engraved. From his apology in the preface, these 2 vols. appear to be only part of a work of which the remaining vols. were promised to be published. He also published the following papers in the Philosophical Transactions: 1. A Letter on an Earthquake felt at Downing in 1753. 2. Another on Coralloid Bodies (*coralloides*), collected by him: and 3. Synopsis of Quadrapeds, 1771. 4. A Pamphlet on the Militia. 5. A paper on the Turkey: and 6. A volume of Miscellanies. Besides being F. R. S. of London, he was a Member of the Society of Antiquaries: F. R. S. of Upsal, in Sweden: a member of the American Philosophical Society, and of the Anglo-Linnæan Society, &c. His ample fortune enabled him to keep a hospitable table; and to dedicate the profits of several of his works to charitable institutions; particularly the Welsh charity school. He died at Downing in 1798, aged seventy-two. He left several works in MS. entitled Outlines of the Globe, of which the View of Hindostan composed the fourteenth and fifteenth volumes. He was en-

ded with a healthy frame of body, an open and intelligent aspect, an active and cheerful disposition, and great vivacity. His heart was kind, benevolent, and charitable. He was also extremely candid and free from prejudices.

PENNATED, *adj.* Lat. *pennatus*. Winged; among botanists pennated are those leaves of plants which grow directly one against another on the same rib or stalk; as those of the ash and walnut-tree.

PENNATULA, the sea-pen, in natural history, a genus of zoophyte, which, though it swims about freely in the sea, approaches near to the gorgonia. This genus has a bone along the middle of the inside, which is its chief support; and this bone receives the supply of its osseous matter by the same polype mouths that furnish it with nourishment. Linnæus reckons seven species. See ZOOPHYTES. It partakes both of the animal and vegetable nature; but some suppose it to be nothing but a fucus or sea-plant. It is certainly an animal, however, and as such is locomotive. Its body generally expands into processes on the upper parts, and these processes or branches are furnished with rows of tubular denticles; they have a polype head proceeding from each tube. The sea-pen is distinguished from the corallines by this specific difference; corals, corallines, alcyonia, and all that order of beings, adhere firmly by their bases to submarine substances; but the sea-pen either swims about in the water, or floats upon the surface. But there are other kinds of sea-pens, or species of this animal, which have no resemblance to a pen: as

1. *P. digitalis*, or *digitiformis*, the finger-shaped sea-pen.

2. *P. filota* of Linnæus.

3. *P. mirabilis*.

4. *P. pavonis piscis*, the feather of the peacock fish.

5. *P. phosphorea*. Dr. Coote Molesworth sent one of these animals to the ingenious Mr. Ellis, the author of many curious papers on the nature of corallines, which was taken in a trawl in seventy-two fathoms water, near the harbour of Brest, in France; the same species are frequently found in the ocean, from the coast of Norway to the Mediterranean Sea, sometimes at considerable depths, and sometimes floating on the surface. Mr. Ellis describes that sent him as follows:—Its general appearance greatly resembles that of a quill feather of a bird's wing; it is about four inches long, and of a reddish color; along the back there is a groove from the quill part to the extremity of the feathered part, as there is in a pen; the feathered part consists of fins proceeding from the stem. The fins move the animal backward and forward in the water, and are furnished with suckers or mouths armed with filaments. There is no perforation at the bottom, and therefore Mr. Ellis is of opinion that the exuvie of the animals upon which it feeds are discharged by the same apertures at which the food is taken in; and in this it is not singular, the same economy being observed in the Greenland polype, described by Mr. Ellis in his Essay on Corallines. Each sucker has eight filaments, which are protruded when prey

is to be caught; but at other times they are drawn back into their cases, which are furnished at the end with spiculae that close together round the entrance, and defend this tender part from external injuries. Dr. Bohadsch of Prague had an opportunity of observing one of those animals alive in the water, and he gives the following account of what he saw:—"A portion of the stern contracted, and became of a strong purple color, so as to have the appearance of a ligature round it; this apparent ligature, or zone, moved upwards and downwards successively through the whole length of the stem, as well the feathered as the naked part; it began at the bottom, and moving upwards to the other extremity, it there disappeared, and at the same instant appeared again at the bottom, and ascended as before; but as it ascended through the feathered or pinnated part it became paler. When this zone is much constricted, the trunk above it swells, and acquires the form of an onion; the constriction of the trunk gives the color to the zone, for the intermediate parts are paler in proportion as the zone becomes deeper. The end of the naked trunk is sometimes curved like a hook; and at its extremity there is a sinus or chink, which grows deeper while the purple ring is ascending, and shallower as it is coming down. The fins have four motions, upward and downward, backward and forward, from right to left, and from left to right. The fleshy filaments or claws move in all directions; and, with the cylindrical part from which they proceed, are sometimes protruded from the fins, and sometimes hidden with them. Upon dissecting this animal, the following phenomena were discovered:—"When the trunk was opened lengthwise, a saltish liquor flowed out of it, so viscid as to hang down an inch. The whole trunk of the stem was hollow, the outward membrane being very strong, and about a tenth part of an inch thick; within this membrane appeared another much thinner; and between these two membranes, in the pinnated part of the trunk, innumerable little yellowish eggs, about the size of a white poppy seed, were seen floating in a whitish liquor; about three parts of the cavity within the inner membrane is filled by a kind of yellowish bone; this bone is about two inches and a half long, and one-twentieth of an inch thick; in the middle it is four square, but towards the ends it grows round and very taper, that end being finest which is next the pinnated part of the trunk. This bone is covered in its whole length with a clear yellowish skin, which at each end runs out into a ligament; one is inserted in the top of the pinnated trunk, and the other in the top of the naked trunk: by the help of the upper ligament, the end of the bone is either bent into an arch, or disposed into a straight line. The fins are composed of two skins; the outward one is strong and leathery, and covered over with a vast number of crimson streaks; the inner skin is thin and transparent: the suckers are also in the same manner composed of two skins, but the outer skin is something softer. Both the fins and suckers are hollow, so that the cavity of the suckers may communicate with those of the fins, as the cavity of the fins does with that of the trunk. Dr.

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Shaw, in his History of Algiers, says, these animals are so luminous in the water that in the night fishermen discover fishes swimming about in various depths of the sea by the light they give. From this extraordinary quality Linnæus calls this species of the sea pen *pennatula phosphorea*, and remarks, after giving the synonymes of other authors, *Habitat in oceano fundum illuminans*. Of all the *pennatulae* yet known, this feather-shaped one, or, as it is called by others, the silver sea pen, is the largest, as well as the most specious in its appearance. It is of a beautiful silvery white, elegantly striated on each of the feather-like processes with lines or streaks of the deepest black. It is very rare, and is a native of the Indian seas. There is a very fine specimen of this species in the British Museum.

6. *P. reniformis*, the kidney-shaped sea pen. The kidney-shaped sea pen was discovered some time ago on the coast of South Carolina, and sent to Mr. Ellis by John Gregg, esq., of Charlestown. It is of a fine purple color; the kidney part is about an inch from end to end, and about half an inch wide in the narrowest part; a tail proceeds from the middle of the body, which is roundish, and about an inch long; is also full of rings like an earth worm, and along the middle both of the upper and under part of it there is a small groove which runs from one end to the other, but there is no perforation at either extremity. The upper part of the body is convex, and about an inch thick; the whole surface is covered with small yellow starry openings, through which little suckers are protruded, each furnished with six tentacula, or filaments, like what are observed on some corals; the under part of the body is quite flat, and is full of ramifications of fleshy fibres, which proceeding from the insertion of the tail, as a common centre, branch out so as to communicate with the starry openings on the exterior edge and upper surface of the animal.

7. *P. sagitta*, the arrow *pennatula*.

PENNELHEUGH, a hill of Roxburghshire, in Crailing parish; on the top of which are relics of a strong camp.

PENNI (John Francis), born at Florence in 1488, was the disciple of Raphael, who, observing his genius and integrity, intrusted his domestic concerns entirely to his management; by which means he got the appellation of *il fattore*, or the steward. His genius was universal; but his greatest pleasure was in painting landscapes and buildings; he was an excellent designer, and colored well in oil, distemper, and fresco. He painted portraits exquisitely, and had such happy talents that Raphael left him heir to his fortune, in partnership with Romano his fellow disciple. Penni died at Naples in 1528.

PENNI (Luke), brother of the above, worked at Genoa and other parts of Italy, with Del Vaga, who married his sister; he went thence to England, where he worked for Henry VIII., and was employed by Francis I. at Fontainebleau; but at last devoted himself to engraving.

PENNINÆ ALPES, a division of the Alps.—Liv. xxi. 38. See ALPS.

PEN'NON, *n.s.* Fr. *pennon*. A small flag or color.

Her yellow locks craped like golden wire,
about her shoulders wren loosely shed,
And, when the wind amongst them did inspire,
They waved like a pennon wide dispred. *Spenser.*
Harry sweeps through our land
With pennons painted in the blood of Harfleur.
Shakspeare.

High on his pointed lance his pennon bore,
His Cretan fight, the conquered Minotaur. *Dryden.*

PENNSYLVANIA, one of the United States of North America, bounded north by New York; east by the river Delaware, which separates it from New Jersey; south by Delaware, Maryland, and Virginia; and west by Virginia and Ohio. It is 307 miles long, and 160 broad; containing about 44,000 square miles. Population, in 1790, 434,373; in 1800 602,545; and in 1810 810,091, of whom 795 were slaves, and 22,492 free blacks. The number of militia in 1817 amounted to 118,016. The counties, number of townships, and chief towns, are exhibited in the following table:—

| Counties. | Townships. | Chief Towns. |
|----------------|------------|---------------|
| Adams | 13 | Gettysburg. |
| Alleghany | 15 | Pittsburg. |
| Armstrong | 7 | Kitaxning. |
| Beaver | 12 | Beavertown. |
| Bedford | 15 | Bedford. |
| Berks | 33 | Reading. |
| *Bradford | | Meansville. |
| Bucks | 29 | Doylestown. |
| Butler | 13 | Butler. |
| Cambria | 3 | Ebensburg. |
| Centre | 11 | Bellefont. |
| Chester | 40 | West Chester. |
| Clearfield | 1 | Clearfield. |
| *Columbia | | Danville. |
| Crawford | 14 | Meadville. |
| Cumberland | 18 | Carlisle. |
| Dauphin | 15 | Harrisburg. |
| Delaware | 21 | Chester. |
| Erie | 14 | Erie. |
| Fayette | 19 | Union. |
| Franklin | 14 | Chambersburg. |
| Greene | 10 | Greene. |
| Huntingdon | 18 | Huntingdon. |
| Indiana | 7 | Indiana. |
| Jefferson | 1 | Jefferson. |
| Lancaster | 25 | Lancaster. |
| *Lebanon | | Lebanon. |
| *Lehigh | | Northampton. |
| Luzerne | 29 | Wilkesbarre. |
| Lycoming | 18 | Williamsport. |
| M'Kean | 1 | Smethport. |
| Mercer | 16 | Mercer. |
| Mifflin | 9 | Lewistown. |
| Montgomery | 30 | Norriston. |
| Northampton | 32 | Easton. |
| Northumberland | 26 | Sunbury. |
| Philadelphia | 18 | Philadelphia. |
| Potter | 1 | Cowdersport. |
| *Pike | 1 | Milford. |
| *Schuylkill | | Orwigsburg. |
| Somerset | 15 | Somerset. |
| *Susquehanna | | Montrose. |
| Tioga | 2 | Wellsborough. |
| *Union | | New Berlin. |

* Formed since last census.

| | | |
|--------------|----|-------------|
| Venango | 8 | Franklin. |
| Warren | 2 | Warren. |
| Washington | 23 | Washington. |
| Wayne | 12 | Bethany. |
| Westmoreland | 14 | Greensburg. |
| York | 22 | York. |

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There are three incorporated cities in this state, Philadelphia, Pittsburg, and Lancaster. Harrisburg is the seat of government. The other most considerable towns are Reading, Easton, Bethlehem, Carlisle, York, Germantown, Chambersburg, Columbia, Sunbury, Brownsville, Washington, &c. There are about fifty banks in this state, of which ten are at Philadelphia. Here is also a university, and colleges have been established at Carlisle, Lancaster, Canonsburg, Washington, and Meadville. There are respectable and flourishing Moravian schools at Bethlehem, Nazareth, and Litiz; and academies have been established at Allentown, Beavertown, Bellefont, Bustletown, Chambersburg, Easton, Erie, Germantown, Greensburg, Griensburg, Meadville, Newtown, Norriston, Northumberland, Pittsburg, Union, Waterford, Wilkesbarre, York, and some other places. Provision has been made by the legislature for establishing an academy in every county.

The congregations of the different denominations of Christians in Pennsylvania were stated, in 1816, to be in the following proportions:—Presbyterians 186; German Calvinists ninety-four, German Lutherans seventy-four; Friends fifty-five, Episcopalians twenty-six, Baptists fifteen, Roman Catholics fourteen, Scotch Presbyterians eight, Universalists one, Covenanters two, Methodists many, and two Jews' synagogues; amounting in all to about 500 religious societies. Some of these numbers are doubtless stated too low. From a statement made by the society of Friends, it appears that they have ninety-seven meetings in this state; and, according to the Baptist report, the number of Baptist churches is sixty.

The inhabitants are principally descendants of the Welsh, English, Irish, Germans, and some Scotch, French, Swedes, and a few Dutch. The Germans are numerous; they consist of Lutherans, Calvinists, Moravians, Catholics, Menonists, &c.; and are distinguished for temperance, industry, and economy. The Swedish language is almost extinct, but the German prevails to a very considerable extent. There are now published in Pennsylvania eighty-four newspapers, of which fifteen are in German.

Sir Walter Raleigh was the first adventurer that attempted to plant colonies on these shores, in the reign of queen Elizabeth. Mr. Hudson, an Englishman, sailing to that part of the coast which lies between Virginia and New England, in the reign of James I., and being about to make a settlement at the mouth of Hudson's River, the Dutch gave him a sum of money to dispose of his interest in this country to them. In 1606 they began to plant it; and, by virtue of this purchase, laid claim to all those countries which are now denominated New York, New Jersey,

and Pennsylvania; but, there remaining some part of this coast which was not planted by the Hollanders, the Swedes sent a fleet of ships thither, and took possession of it for that crown; but the Dutch, having a superior force in the neighbourhood, compelled the Swedes to submit to their dominion, allowing them, however, to enjoy the plantations they had settled. The English, not admitting that either the Dutch or Swedes had any right to countries first discovered and planted by a subject of England, and part of them at that time possessed by English subjects, under charter from queen Elizabeth and king James I.: king Charles II. during the first Dutch war in 1664, granted New York, Jersey, and Pennsylvania, of which the Dutch had usurped the possession, to his brother James duke of York: and Sir Robert Carr being sent over with a squadron of men of war and land forces, and summoning the Dutch governor of the city of New Amsterdam, now New York, to surrender, he yielded that capital to the English: and the rest of the places in the possession of the Dutch and Swedes followed his example; and these countries were confirmed to the English by the Dutch, at the next treaty of peace between the two nations. The duke of York afterwards parcelled them out to under proprietors; selling in particular, to William Penn the elder, in 1683, the town of Newcastle, alias Delaware, and a district of twelve miles round the same; to whom his heirs, and assigns, by another deed of the same date, he made over all that tract of land from twelve miles south of Newcastle to the Whorehills, otherwise called Cape Henlopen, now known by the name of the Three Lower Counties upon Delaware River. All the rest of the under-proprietors, some time after, surrendered their charters to the crown; whereby New York and the Jerseys became royal governments; but Penn retained that part of the country which had been sold to him by the duke of York, together with what had been granted to him before, in 1680, 1681, which now constitutes the State of Pennsylvania. As soon as Penn had got his patent, he began to plant the country. Those who went over from England were generally Dissenters and Quakers, whose religion is established by law here, but with full liberty to all other Protestant sects. The Dutch and Swedes, who were settled before Mr. Penn became proprietor, choosing still to reside in this country, as they did in New York and the Jerseys, obtained the same privileges as the rest of the king's subjects; and their descendants are now the same people, speaking their language and being governed by the same laws. Mr. Penn, however, not satisfied with the title granted him by king Charles II. and his brother, bought the lands also of the Indians for a valuable consideration, or what they esteemed such, paying them in cloth, tools, and utensils, to their entire satisfaction; for they had not hands to cultivate the 100th part of their lands, and, if they could have raised a product, there was nobody to buy: the purchase, therefore, was all clear gain to them; and, by the coming of the English, their paltry trade became so profitable, that they soon found their condition much altered for the better. The

Indian council at Onondago, however, disapproved of their deputies parting with so much land; and, in 1755, obliged the proprietaries to reconvey great part of the same to the Indians. A dispute subsisted a long time between the proprietaries of the province and lord Baltimore, proprietary of Maryland, about the right to certain lands; which was at last amicably adjusted, greatly in favor of the Penns. About 1704 there happened some alteration in the constitution of the province. The establishment that took place, and subsisted till the American war broke out, consisted of a governor, council, and assembly, each with much the same power and privileges as in the neighbouring colony of New York. The lieutenant-governor and council were appointed by the proprietors Thomas and Richard Penn, with his majesty's approbation; but, if the laws enacted here were not repealed within six months after they had been presented to the king for his approbation or disallowance, they were not repealable by the crown after that time. A state of peace and happiness affords few materials for the historian. On the breaking out of the American war, the citizens of Philadelphia took an early and active part. In September 1776 they established a new constitution; which was considerably altered and improved in June 1792. In 1793 this state, but particularly the capital, was visited by the yellow fever, which, in the short space of three months, carried off about 5000 people. In 1794 an alarming insurrection took place in the western counties, the ostensible cause of which was an excise upon whisky, but an incendiary letter, afterwards discovered, showed that a deep scheme had been laid to excite a rebellion in the state. But by the wise and decisive measures adopted by the executive government, supported by the great body of the citizens, the insurrection was quelled and tranquillity restored almost without bloodshed.

The legislature at this period consists of a senate and a house of representatives. The representatives, whose number cannot be less than sixty nor more than 100, are chosen annually. The senators are chosen for four years, one quarter of them being elected every year. Their number cannot be less than one-fourth, nor more than one-third of the representatives. The governor is elected for three years by the people, but cannot hold the office more than nine years in twelve. The elections are made on the second Tuesday in October and the legislature meets in December. This state sends twenty-three representatives to congress.

The principal rivers are the Delaware, Schuylkill, Lehigh, Susquehanna, Juniata, Alleghany, Monongahela, Ohio, and Youghiogeny.

Pennsylvania is intersected by various mountains. The principal ridges, of the Alleghany Mountains, comprehended in Pennsylvania, are the Kittatinny, or the Blue Mountains. Behind these, and nearly parallel to them, are Peters, Tuscarora, and Nescopeck mountains, on the east side of the Susquehanna; on the west Shareman's Hill, Sideling Hill, Ragged, Great, Warrior's Evil's and Will's mountains; then the great Alleghany ridge, which, being the largest,

gives name to the whole; and west of this are the Chestnut Ridges. Between the Juniatta and the west branch of the Susquehanna, are Jacks, Tussys, Nittiny, and Bald Eagle mountains. The valleys between these mountains are often of a rich, black soil, suited to the various kinds of grass and grain. Some of the mountains admit of cultivation almost to their summits. The other parts of the state are generally level, or agreeably diversified with hills and valleys.

The soil of Pennsylvania is various; a small part of it is barren, but a great proportion of it fertile, and a considerable part very excellent. It is generally better adapted to tillage than grazing; and much of it, particularly the south-east part, is under excellent cultivation. The two best tracts of land are, one in the south-east part, along the Susquehanna, the other in the north-west part, between Lake Erie and Alleghany River. Wheat is the most important article of produce. The next in value is Indian corn. Buck wheat, rye, barley, oats, flax, hemp, beans, peas, and potatoes, are extensively cultivated. Cherries, peaches, apples, and cider, are abundant. There are large dairies in many parts. Pennsylvania has an excellent breed of horses. The number of domestic animals in the state, according to the returns of 1810, was as follows: horses 255,645, neat cattle 612,998, sheep 619,223. Of the sheep 4128 were Merinos, and breeds mixed with Merinos.

Iron ore is distributed in large quantities in many parts of the state; and in some places copper, lead, and alum are found. Here are also numerous lime-stone quarries, and various kinds of marble; and in the middle and western parts there is an abundance of coal.

The general style of architecture in this state is neat and solid. Stone buildings are most common in old settlements; brick houses are frequent; log and frame houses abound in the new country. In the towns there is a considerable proportion of brick houses. Many turnpike roads of the most durable materials, and best construction, are made in various parts of the state. That from Philadelphia to Lancaster is sixty-two miles in length, twenty-four feet wide, and covered eighteen inches deep with powdered stone. Numerous bridges, of great strength and beauty, are constructed over the rivers.

Pennsylvania exceeds all the other states in the variety and extent of her manufactures, some of which are of superior excellence. In 1810 there were sixty-four cotton-manufactories, forty-four blast furnaces, six air furnaces, four bloomeries, seventy-eight forges, fifty trip-hammers, eighteen rolling and slitting mills, 175 naileries, sixty-four paper-mills, eight glass works, thirty-five rope-walks, and 108 printing-offices. The total amount of the manufactures, embracing 220 articles, was 44,194,740 dollars. The exports in 1816 amounted to 7,196,246 dollars. They consist of flour, grain, iron, and various manufactured articles.

PEN'NY, *n. s.*

PEN'NYLESS, *adj.*

PEN'NYWEIGHT,

PEN'NYWISE,

PEN'NYWORTH,

Plural pence. Sax.

penig. A small coin, of which twelve make a shilling; the radical denomination from which English

coin is numbered. See below. Pennyless is without pence or money; poor: pennyweight, a weight of twenty-four grains troy: pennywise, wise only in pence; saving in small sums, and careless of greater: pennyworth, as much as a penny, or any given portion of money, will buy; hence a bargain; a purchase; a good bargain.

And whanne the covenaut was maad with workmen of a *peny* for the day he sente hem into his vyneyard. *Wiclif. Matt. xx.*

And they say unto him, Shall we go and buy two hundred *pennyworth* of bread? *Mark vi. 37.*

The same servant found one of his fellow-servants, which owed him an hundred *pence*, and took him by the throat. *Matthew.*

As for corn it is nothing natural, save only for barley and oats, and some places for rye; and therefore the larger *pennyworths* may be allowed to them. *Spenser on Ireland.*

You shall hear

The legions, now in Gallia, sooner landed
In our not fearing Britain, than have tidings
Of any *peny* tribute paid.

Shakspeare. Cymbeline.

We will not lend thee a *peny*.
Pirates may make cheap *pennyworths* of their pillage,

Id. Henry VI.

Be not *penywise*; riches have wings and fly away of themselves. *Bacon.*

Lucian affirms that the souls of usurers after their death are translated into the bodies of asses, and there remain certain days for poor men to take their *pennyworths* out of their bones and sides by cadgel and spur. *Peacock.*

Because there is a latitude of gain in buying and selling, take not the utmost *peny* that is lawful, for although it be lawful, yet it is not safe. *Taylor.*

She sighs and shakes her empty shoes in vain.
No silver *peny* to reward her pain. *Dryden.*

Pepper and Sabeen incense take;
And with post-haste thy running markets make;
Be sure to turn the *peny*. *Id.*

For fame he prayed, but let the event declare
He had no mighty *penyworth* of his prayr. *Id.*

Though in purchases of church lands men have usually the cheapest *pennyworths*, yet they have not always the best bargains. *South.*

It may be a contrivance of some printer, who hath a mind to make a *peny*. *Swift's Miscellany.*

My friendship I distribute in *pennyworths* to those about me who displease me least. *Swift.*

The Seville piece of eight is $1\frac{1}{2}$ *penyweight* in the pound worse than the English standard; weighs fourteen *penyweight*; contains thirteen *penyweight*, twenty-one grains, and fifteen mites, of which there are twenty in the grain of sterling silver; and is in value forty-three English *pence*, and eleven hundredths of a *peny*. *Arbuthnot.*

PENNY, or PENY, in commerce, an ancient English coin, which had formerly considerable course; but, till of late, was dwindled into an imaginary money, or money of account, containing the twelfth part of a shilling, or 240th of a pound. Camden derives the word from the Latin pecunia, money. The ancient English penny, penig, or pening, was the first silver coin struck in England; and the only one current among the Anglo-Saxons: according to Camden, Spelman, Dr. Hicks, &c. The penny was equal in weight to our three-pence: five of them made one shilling, or scilling Saxon; thirty a mark or

manouse, equal to our seven shillings and sixpence. Till the time of king Edward I. the penny was struck with a cross, so deeply indented in it that it might be easily broke, and parted, on occasion, into two parts, thence called half-pennies; or into four, thence called fourthings, or farthings. But that prince coined it without indenture; in lieu of which he first struck round halfpence and farthings. He also reduced the weight of the penny to a standard; ordering that it should weigh thirty-two grains of wheat, taken out of the middle of the ear. This penny was called the penny sterling. Twenty of these pence were to weigh an ounce; when the penny became a weight as well as a coin. See COINS. The silver penny is now disused.

PENNY, in ancient statutes, is used for all silver money: and hence the ward-penny, averpenny, hundred-penny, tithing-penny, and brothal-penny.

PENNYCUICK (Alexander), M. D., a Scottish poet and physician, who published a small volume of humorous poems in the Scottish dialect, in the seventeenth century. He was proprietor of New Hall and Romanno.

PENNY-ROYAL, in botany. See MENTHA.

PENNY-ROYAL, VIRGINIAN. See SATUREJA.

THE PENNY-WEIGHT is a Troy weight, containing twenty-four grains; each grain weighing a grain of wheat gathered out of the middle of the ear, well dried. The name took its rise hence, that this was formerly the weight of one of our ancient silver pennies. See PENNY. Twenty of these penny-weights make an ounce Troy.

PENNY-WORT, MARSH. See HYDROCO-STYLE.

PENNY-WORT, WALL. See COTTLEDON.

PENNY-WORT, WATER. See HYDROCOYLE.

PENOBSCOT, a county of Maine, North America, bounded on the east by Washington and Hancock counties, on the south by Hancock county, and on the west by Kennebeck and Somerset counties. It is watered by the Penobscot, formed from the north part of Hancock county. Chief town Bangor.

PENOBSCOT, a sea-port and post town of Hancock county, Maine, on the east side of Penobscot Bay; four miles north of Castine; and 240 north-east of Boston. Population 1302. It is a place of considerable trade. The shipping belonging to this port, in 1816, amounted to 18,611 tons.

PENOBSCOT, the largest river in Maine. The western and principal branch rises in the western part of the state, some of its sources being near the head waters of the Chaudiere, and others near those of St. John's. It flows east by south through Chesuncook and Pemmidumpkok lakes, and unites with the eastern branch, fifty-four miles in a right line, north by east of Bangor. The eastern branch rises near the sources of the Aroostic. After the junction it holds a general course south by west, till it flows into the head of Penobscot Bay, between the towns of Penobscot and Prospect. It is navigable for ships to Bangor, where the navigation and tide terminate, fifty-two miles north of Owl's Head, at the en-

trance of the bay. The towns on the west side of the river and bay, beginning at the head of navigation, are Bangor, Hampden, Frankfort, Prospect, Belfast, Northport, Lincolnville, Camden, and Thomastown; on the east side, Brewer, Orington, Bucksport, Orland, Penobscot, Castine, Sedgewick, and Deer Isle.

PENOBSCOT BAY, a large bay of the Atlantic, on the south coast of Maine. It embosoms Long Island, on which is the town of Islesborough, the Fox Islands, containing the town of Vinalhaven, and several smaller islands. It is a very fine bay, affords great advantages of navigation, and presents a variety of beautiful landscapes. Its entrance between the Isle of Holt and Owl's Head, is eighteen miles wide, and its length from north to south is about thirty. Long. 68° 40' to 68° 56' W., lat. 44° to 44° 30' N.

PENOBSCOT HILLS, mountains of Maine, on the west coast of Penobscot Bay.

PENRITH, a market town and parish of Cumberland, seventeen miles south from Carlisle, and 283½ N. N. W. from London. Checks, hats, and fancy waist-coat-pieces, are the manufactures of this place. The town was originally claimed, and continued a long time in the possession of the Scots; but it being disputed by the English, it was twice burnt in the reigns of Edward III. and Richard II., when it had a castle. It consists of several irregular streets, but some of the houses are handsome and commodious, and extensive improvements have been made of late. The church is a large and handsome modern structure. It has a good free-school, a charity-school, and two Sunday-schools, with several meeting-houses for Presbyterians and Quakers, a museum for natural curiosities, and an assembly-room. On the north bank of the Emont are two caves or grottos, dug out of the solid rock, and very extensive. This town suffered greatly by the plague in 1380 and 1598. Markets on Tuesday and Saturday. Fairs, June 8th, and August 5th.

PENROSE (Thomas), was the son of the Rev. Mr. Penrose, rector of Newbury, Berks, a man of great abilities, descended from an ancient Cornish family. Mr. Penrose, jun., being intended for the church, pursued his studies with success, at Christ Church, Oxford, until summer 1762; when, his eager inclination to the naval and military service overpowering his attachment to his real interest, he left college, and embarked in the unfortunate expedition against Nova Colonia, in South America, under captain Macnamara. The issue was fatal. The Clive (the largest vessel) was burnt; and though the Ambuscade escaped (on board of which Mr. Penrose, acting as lieutenant of marines, was wounded), yet the hardships which he afterwards sustained in a prize sloop, in which he was stationed, utterly ruined his constitution. Returning to England with ample testimonials of his gallantry and good behaviour, he finished, at Hertford College, Oxford, his course of studies; and, having taken orders, accepted the curacy of Newbury, the income of which, by the voluntary subscription of the inhabitants, was considerably augmented. After he had continued in that station about nine years, he was

presented by a friend to a living worth nearly £500 per annum. It came, however, too late; for Mr. Penrose's health was now in a deep decline, and he died at Bristol in 1779, aged thirty-six. In 1768 he married Miss Mary Slocock, of Newbury, by whom he had one child, Thomas, who was educated at Winton College. Mr. Penrose was respected for his extensive erudition, admired for his eloquence, and esteemed for his social qualities. By the poor, to whom he was liberal, he was venerated. To his poetical abilities, the public, by their reception of his *Flights of Fancy*, &c., have given a favorable testimony.

PENRYN, a borough and market-town of Cornwall, situate on an eminence at the mouth of the King's Road River, that runs into Falmouth harbour, three miles north-west from Falmouth, and 266½ W.S.W. from London. Its principal business is in the pilchard and Newfoundland fisheries. It is a large town, consisting of one main street, and several smaller ones. Formerly it had a collegiate church. Here is a market-house, town-hall, assembly-room, and a good custom-house. The town is extremely well watered, having streams running through the streets; on which are four grist-mills, and one paper-mill. Here are several good breweries, which supply the Falmouth shipping; and it is reckoned the granary of the south-western part of the county. It was anciently surrounded by a wall, and defended by a castle. It is governed by a corporate body, consisting of twelve aldermen, twelve common-councillmen, a recorder, steward, and other officers, and sends two members to parliament, who are elected by the mayor, portreeve, aldermen, and inhabitants at large, paying scot and lot. The number of voters is about 140. The manor of Penryn-Forryn has a court of record, and the steward holds pleas to any amount, and proceeds by bailable capias in all cases above £10. Market on Wednesday, Friday, and Saturday. Fairs, 1st of May, 7th of July, and 21st of December.

PENSA, a government in the east part of European Russia, lying between Niznei-Novgorod and Saratov. Its area is 16,500 square miles; the number of its circles or districts ten. Lying between 53° and 54° N. lat., its climate is mild, and the soil fertile; but it is as backward in cultivation as the rest of this vast empire. The corn raised, however, is more than is wanted for consumption; part of the overplus is distilled, and the rest exported. Here are Tartars of various tribes, such as Mordvans, Baschkirs, Calmucs, and some Circassians. These retain their pastoral habits; and the Mordvans, in particular, attach themselves to the rearing of bees. With the exception of distilled spirits and soap, the manufactures are insignificant; and the exports are limited to spirits and raw produce, i. e. corn, wax, honey, and wool. Population 800,000.

PENSA, the capital of the above government, is situated on an eminence at the confluence of the Penza and Sura, on a height. It contains twelve churches, and two monasteries. The high church is a fine building. The manufactures are leather and soap, and the inhabitants carry on a brisk traffic in corn and foreign wines. Inhabitants 10,000. 460 miles south-east of Moscow.

PENSACOLA, a town of West Florida, on the gulf of Mexico, at the head of a bay or basin, formed by several rivers. This harbour is safe from every wind, and has from seven to eight fathoms water; so that vessels drawing twenty-one feet may enter. Pensacola is in 30° 28' N. lat., and 87° 12' W. long. The city is of an oblong form, about a mile in length, and a quarter of a mile in breadth, delightfully situated. The entrance into the bay is fortified by a fort on Rosa Island, and a battery on the opposite shore. When it was in the hands of the English it exported, in skins, furs, logwood, and dyeing stuffs, to England to the amount of £63,000 annually; and its imports from this country were valued at £97,000. After the Spaniards took it in 1781 it gradually declined. In 1794 the total population did not exceed 400. When the town was attacked by the Spaniards, in 1781, the defence was spirited, and the progress of the siege slow; but, unfortunately, a shell, bursting at the door of a magazine in one of the advanced works, set fire to the powder, which in an instant blew up the whole redoubt: seventy-six of the garrison were killed, and twenty-four badly wounded. In 1818 Pensacola was occupied by an American force, in virtue, as was supposed, of a treaty between Spain and the United States for the cession of the Floridas. The forces were, however, recalled. Long. 87° 12' W., lat. 30° 28' N.

PENSILE, *adj.* } Lat. *pensilis*. Hanging;
PENSILENESS, *n. s.* } suspended.

Two trepidations; the one manifest and local, as of the bell when it is *pensile*; the other, secret of the minute parts. *Bacon.*

This ethereal space,
Yielding to earth and sea the middle space,
Anxious I ask you, how the *pensile* ball
Should never strive to rise, nor never fear to fall.
Prior.

PENSION, *n. s. & v. a.* } Fr. Span. Belg.
PENSIONARY, *adj. & n. s.* } and Teut. *pension*;
PENSIONER, *n. s.* } of Lat. *pensio*. A stipend paid without equivalent: to pension is to support by a gratuitous stipend: pensionary means supported by or connected with a pension: pensioner, a person thus supported.

Prices of things necessary for sustentation, grew excessive to the hurt of *pensioners*, soldiers, and all hired servants. *Camden.*

Scorn his household politics,
His silly plots and *pensionary* spies. *Donne.*
They were devoted by *pensionary* obligations to the olive. *Houel.*

Hovering dreams,
The fickle *pensioners* of Morpheus' train. *Milton.*
Those persons whom he trusted with his greatest secret and greatest business, his charity, seldom had recourse to him, but he would make enquiry for new *pensioners*. *Pell.*

A charity bestowed on the education of her young subjects has more merit than a thousand *pensions* to those of a higher fortune. *Addison.*

One might expect to see medals of France in the highest perfection, when there is a society *pensioned* and set apart for the designing of them.

Id. on Medals.
The rector is maintained by the perquisites of the curate's office, and therefore is a kind of *pensioner* to him. *Collier.*

The hero William, and the martyr Charles,
One knighted Blackmore, and one pensioned Quarles.

Pope.

He has lived with the great without flattery, and
been a friend to men in power without pensions. *Id.*

In Britain's senate he a seat obtains,
And one more pensioner St. Stephen gains. *Id.*

Chremes, for airy pensions of renown,
Devotes his service to the state and crown.

Young.

A pension given as a reward for service to the state
is surely as good a ground of property as any security
for money advanced to the state.

Burke.

Arrived, the pensionary band,
Hopping and chirping, close at hand,
Solicit what they soon receive,
The sprinkled plenteous donative.

Couper.

A PENSION is, or ought to be, a sum of money
paid annually for actual services, or considera-
tions already past. The yearly payment of each
member to the houses of the inns of courts are
likewise named pensions; and the yearly assem-
bly of the society of Gray's Inn, to consult on
the affairs of the house, is also called a pension.

PENSIONARY, or PENSIONER, a person who
has an appointment or yearly sum, payable
during life, by way of acknowledgment, charged
on the estate of a prince, company, or particular
person.

PENSIONARY, in the former government of
the United Provinces, was the first minister of
the regency of each city in Holland. His office
was to give his advice in affairs relating to the
government, either of the state in general, or of
the city in particular; and, in assemblies of the
states of the province, he was speaker in behalf
of his city. The function, however, of these
pensionaries was not every where alike: in some
cities they only gave their advice, and were never
found in assemblies of the magistrates, except
when expressly called thither; in others they at-
tended constantly; and, in others, they made
the propositions on the part of the burgomasters,
drew up their conclusions, &c. They were
called pensionaries, because they received an ap-
pointment or pension.

PENSIONARY, GRAND, an appellation given to
the first minister of the states of Holland. The
grand pensionary was chairman in the assemblies
of the states of that province: he proposed the
matters to be consulted on; collected the votes;
formed and pronounced the resolutions of the
states; opened letters; conferred with foreign
ministers, &c. His business was also to inspect
the finances, to maintain the authority of the
states, and to see that the laws were observed;
and he was perpetual deputy of the states-general
of the United Provinces. His commission was,
however, given him only for five years; after
which it was deliberated whether or not it should
be renewed; but there is no instance of its being
revoked; therefore death only put an end to the
functions of this important minister.

PENSIONER, in the university of Cambridge,
and in that of Dublin, has a very peculiar mean-
ing; for those students, either under-graduates or
bachelors of arts, are called pensioners who live
wholly at their own expense, and who receive no
emolument whatever from the college of which
they are members. They are divided into two

kinds, the greater and the less; the former of
whom are generally called fellow-commoners,
because they eat with the fellows of their college;
the latter are always called pensioners, and eat
with the scholars, who are those students of the
college, either under-graduates or bachelors, who
are upon the foundation, who receive emolu-
ments from the society, and who are capable of
being elected fellows. See SERVITOR and SIZAR.

PENSIONER, in general, denotes a person who
receives a pension, yearly salary, or allowance
from government. Hence

PENSIONERS, THE BAND OF GENTLEMEN, a
sort of guard to the king's person, consisting of
forty gentlemen, who receive a yearly pension of
£100, and are supposed to wait in his bed-
chamber. This band was first instituted by
king Henry VII., and their office is to attend
the king's person, with their battle-axes, to and
from his chapel-royal, and to receive him in the
presence-chamber, or coming out of his privy
lodgings: they are also to attend at all great
solemnities, as coronations, St. George's feast,
public audiences of ambassadors, at the sove-
reign's going to parliament, &c. They likewise
carry up the sovereign's dinner on the coronation-
day and St. George's feast; at which times the
king or queen often confers the honor of knight-
hood on two such gentlemen of the band as their
captain presents. Their arms are gilt battle-
axes; and their weapons on horse-back, in time
of war, are cuirassiers' arms, with sword and
pistols. Their standard, in time of war, is ar-
gent, a cross gules. Their captain is a noble-
man, who has under him a lieutenant, a standard-
bearer, a clerk of the check, secretary, paymaster,
and harbinger.

PENSIVE, *adj.* Pr. *pensif*; Ital. *pensivo*;
from Latin, *pensio*. Sorrowfully serious or
thoughtful; melancholy.

So fair a lady did I spy,
On herbs and flowers she walked pensively
Mild, but yet love she proudly did forsake.

Spenser.

Think it still a good work, which they in their
pensive care for the well bestowing of time account
waste.

Hooker.

Concerning the blessings of God, whether they
tend unto this life or the life to come, there is great
cause why we should delight more in giving thanks
than in making requests for them, inasmuch as the
one hath *pensiveness* and fear, the other always joy
annexed. *Id.*

Are you at leisure, holy father?

—My leisure serves me, *pensive* daughter, now.

Shakespeare.

Would'st thou unlock the door

To cold despairs and gnawing *pensiveness*?

Herbert.

We at the sad approach of death shall know
The truth, which from these *pensive* numbers flow
That we pursue false joy, and suffer real woe.

Prior.

Anxious cares the *pensive* nymph oppress,
And secret passions laboured in her breast.

Pope.

PENSTOCK, a sluice or flood-gate, serving
to retain or let go the water of a mill-pond, or
the like.

PENT, *part. pass.* } Shut up. A small shed
 PENTHOUSE, *n. s.* } hanging out from a main
 wall: written corruptly pentice.

The Turks lurking under their *penthouse*, laboured with mattocks to dig up the foundation of the wall.

Knolles.

The son of Clarence have I *pent* up close.

Shakespeare.

Close *pent* up guilts,

Rive your concealing countenances.

Id.

This is the *penthouse* under which Lorenzo desired us to make a stand. *Id. Merchant of Venice.*

Sleep *pent* neither night nor day

Hang upon his *penthouse* lid.

Shakespeare.

Climes that fear the falling and lying of much snow, ought to provide more inclining *pentices*.

Wotton.

Those defensive engines, made by the Romans into the form of *penthouses*, to cover the assailants from the weapons of the besieged, would be presently battered in pieces with stones and blocks.

Wilkins.

My *penthouse* eye-brows and my shaggy beard
 Offend your sight; but these are manly signs.

Dryden.

The soul pure fire, like ours, of equal force;

But *pent* in flesh, must issue by discourse. *Id.*

Pent up in Utica he vainly forms

A poor epitome of Roman greatness.

Addison.

Yet man, fool man! here buries all his thoughts,
 Inters celestial hopes without one sigh,
 Prisoner of earth, and *pent* beneath the moon,
 Here pinions all his wishes.

Young.

PENTA, a town of the French empire, in the island and department of Corsica, seven miles north-east of Porta.

PENTACEROS, in natural history, a name given by Linkius and some other authors to a kind of stella marina, or sea-star fish, composed of five principal rays, with several transverse hairy or downy processes.

The PENTACHORD, of Gr. *πεντε* five, *χορδή* string, was an ancient musical instrument. The invention of the pentachord is referred to the Scythians; the strings were of bullock's leather; and they were struck with a plectrum made of goat's horn.

PENTACROSTIC, in poetry, a set of verses so disposed as that there are always five acrostics of the same name, in five divisions of each verse. See ACROSTIC.

PENTACTINODOS, in natural history, a name given by some authors to those species of star-fish which are composed of a body divided into five rays.

PENTADACTYLON, five fingers, in botany, a name given by some authors to the ricinus or palma Christi, from the figure of its leaf.

PENTADACTYLOS PISCIS, the five-fingered fish, in ichthyology, the name of a fish common in all the seas about the East Indies, and called by the Dutch there *viif vinger visch*. It has this name from five black streaks which it has on each side, resembling the prints of five fingers. Its head is flat, convex at the bottom, plain in the sides, and inclined in the fore part. The snout is thick, obtuse, and round; the lower jaw at its extremity bent and rounded; the nostrils are double; the balls of the eye oval; the iris of a silver color; the first fin of the back is small,

the second is more elevated; those of the breast are inserted obliquely, that of the anus is greatly extended, and that of the tail much sloped. The whole body is covered with scales of a moderate size, thin, flexible, and slightly indented on their hinder edge; the back is reddish, the sides of a silver color, and the fins white. The fish is described by some as about nine inches long; by others as a foot and a half. It is a dry but not ill-tasted fish.

PENTAEDROSTYLA, in the old system of mineralogy, a genus of spars. The bodies of this genus are spars in form of pentagonal columns, terminated by pentagonal pyramids at one end, and regularly affixed at the other to some solid body.

PENTAE'DROUS, *adj.* Gr. *πεντε*, five, and *εδρα*, scat, or sides. Having five sides.

The *pentaedrous* columnar coralloid bodies are composed of plates set lengthways, and passing from the surface to the axis.

Woodward.

PENTAGON, *n. s.* } Fr. *pentagon*; Gr.
 PENTAGONAL, *adj.* } *πεντε*, five, and *γωνια*, an angle. A figure with five angles: pentagonal, quinquangular; having five angles.

I know of that famous piece at Capraïora, cast by Barocchio into the form of a *pentagon* with a circle inscribed.

Wotton.

The body being cut transversely, its surface appears like a net made up of *pentagonal* meshes, with a *pentagonal* star in each mean.

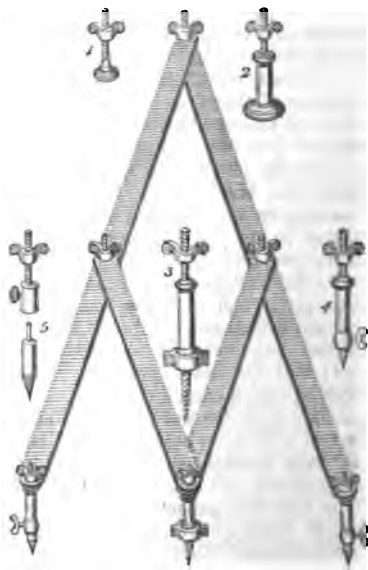
Woodward.

PENTAGON, in geometry, is a figure of five sides and five angles. See GEOMETRY.

PENTAGON, in fortification, denotes a fort with five bastions.

PENTAGONOTHECA, in botany, the name given by Vaillant to the plant called by Linnæus, Plumier, Houston, and others, pisonia.

PENTAGRAPH, an instrument designed for copying figures in any given proportion without any general skill in the art of drawing. See MINIATURE. The instrument is otherwise called a parallelogram. The common pentagraph of the diagram

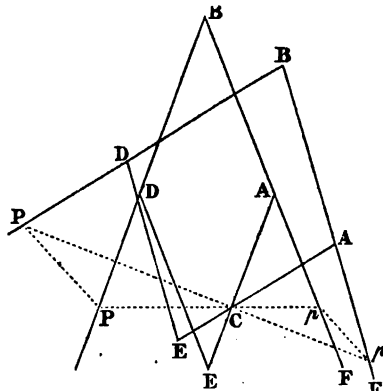


consists of four brass or wooden rulers, two of them from fifteen to eighteen inches long, the other two half that length. At the ends, and in the middle, of the longer rulers, as also at the ends of the shorter, are holes, upon the exact fixing of which the perfection of the instrument chiefly depends. Those in the middle of the long rulers are to be at the same distance from those at the end of the long ones, and those of the short ones; so that when put together they may always make a parallelogram. The instrument is fitted together for use by several little pieces, particularly a little pillar, No. 1, having at one end a screw and nut, whereby the two long rulers are joined; and at the other a little knot for the instrument to slide on. The piece, No. 2, is a rivet with a screw and nut, wherewith each short ruler is fastened to the middle of each long one. The piece, No. 3, is a pillar, one end whereof, being hollowed into a screw, has a nut fitted to it. At the other end is a worm to screw into the table; when the instrument is to be used, it joins the end of the two short rulers. The piece, No. 4, is a pen, portcrayon, or pencil, screwed into a little pillar. The piece, No. 5, is a brass point, moderately blunt, screwed likewise into a little pillar.

I. To copy a design in the same scale or bigness as the original: screw the worm No. 3 into the table; lay a paper under the pencil No. 4, and the design under the point No. 5. This done, conducting the point over the several lines and parts of the design, the pencil will draw or repeat the same on the paper. II. If the design be to be reduced, e. g. into half the space, the worm must be placed at the end of the long ruler, No. 4, and the paper and pencil in the middle. In this situation, conduct the brass point over the several lines of the design, as before; and the pencil at the same time will draw its copy in the proportion required; the pencil here only moving half the lengths that the point moves. Hence, on the contrary, if the design be to be enlarged by one-half, the brass point, with the design, must be placed in the middle, at No. 3, the pencil and paper at the end of the long ruler, and the worm at the other. III. To enlarge or reduce in other proportions, there are holes drilled at equal distances on each ruler, viz. all along the short ones, and half way of the long ones, in order for placing the brass point, pencil, and worm, in a right line therein; i. e. if the piece carrying the point be put in the third hole, the two other pieces must be put in its third hole. If, then, the point and design be placed at any hole of the great rulers, and the pencil with the paper at any hole of the short ruler, which forms the angle therewith, the copy will be less than half the original. On the contrary, if it be placed at one of the holes of that short ruler, which is parallel to the long ruler, the copy will be greater than half the original.

The construction of this instrument requires a degree of accuracy which most of our instrument-makers are strangers to; for which reason there are very few of the instruments that succeed. Few will do any thing tolerably but straight lines; and many of them not even these. To prove that the figure described by a pentagraph

is similar to the given figure; let C, of the following diagram, be the fixed centre of motion;



P the pencil for tracing the given figure PP , and p the pencil which traces the other figure pp ; p , &c., must be so adjusted, that p , C , and P , may lie in one straight line; then, since $Bp : A p :: B P : A C$, whatever be the situation of the pentagraph, the angles $P C P$ and $p C p$, are vertical: and therefore, $P C p$ will in every position of the instrument be a right line; but $P C : p C :: B A : A p$, in each of the two positions in the figure, and consequently the triangles $P C P$, $p C p$, are similar; and $P P : p p :: P C : C p :: B A : A p$, or in a given ratio. Hence it appears, that, by moving the pencil p , $A p$ may be equal to $B A$, or less in any proportion; and consequently $p p$ may be equal to $P P$, or less in the same proportion.

PENTAGYNIA, from Gr. *πεντε* five, and *γυνή*, a woman, or wife, in the Linnæan system of botany, an order in the classes pentandria, decandria, dodecandria, icosandria, and polyandria; consisting of plants which have hermaphrodite flowers, with five female organs. See BOTANY.

PENTAMETER, *n. s.* Fr. *pentametre*; Lat. *pentametrum*. A Latin verse of five feet.

Mr. Distich may probably play some *pentameters* upon us, but he shall be answered in Alexandrines. Addison.

PENTANDRIA, from Gr. *πεντε* five, and *ανηρ*, a man, or husband, the fifth class in Linnæus's sexual method, consisting of plants which have hermaphrodite flowers, with five stamens or male organs. See BOTANY.

PENTANDRIA is also the name of an order in the classes monadelphia, diadelphia, polyadelphia, gynandria, monœcia, and diœcia. See BOTANY.

PENTANGULAR, *adj.* Gr. *πεντε* and *ανγυλον*. Five cornered.

His thick and bony scales stand in rows, so as to make the flesh almost *pentangular*. Grew.

PENTAPETES, in botany, a genus of the dodecandria order, belonging to the monadelphia class of plants; and in the natural method ranking under the thirty-seventh order, columniferae. The calyx is quinquepartite; the stamens are twenty in number, of which five are castrated and long; the capsule quinquelocular and polyspermous. There is but one species known, viz. *P.*

Phœnicia, with halbert-pointed, spear-shaped, sawed leaves. It is an annual plant, a native of India, and rises to two or three feet, adorned with fine scarlet flowers, consisting of one petal cut into five segments. In the centre of the flower arises a short thick column, to which adhere fifteen short stamina. It is a tender plant, and must be brought up in the hot-house.

PENTAPOLIS, a district of Cyrenaica, situated on the Mediterranean; denominated from its five cities; namely, Berenice, Arsinoe, Ptolemais, Cyrene, and Apollonia.—Ptol.

PENTAPOLIS OF THE PHILISTINES, the five cities of the Philistines, Gaza, Gath, Ascalon, Azotus, and Ekron.

PENTATEUCH, *n. s.* Fr. *pentateuque*; Gr. *πεντε* and *τευχος*. The five books of Moses.

The author in the ensuing part of the *pentateuch* makes not unfrequent mention of the angels.

Bentley.

Hesiod in his commerce with the daughters of memory had recourse to foreign correspondents, and often drew bills at sight on the *pentateuch*.

Whyte's Poems, Preliminary Essay.

PENTATEUCH is derived from the Greek *πεντατευχος*, from *πεντε*, five, and *τευχος*, an instrument or volume; and signifies the collection of the five instruments or books of Moses, viz. GENESIS, EXODUS, LEVITICUS, NUMBERS, and DEUTERONOMY. See these articles.

PENTATHLON, or PENTATHLUM, in antiquity, a general name for the five exercises performed at the Grecian games, viz. wrestling, boxing, leaping, running, and playing at the discus.

PENTECOST, *n. s.* } Gr. *πεντηκοστη*; Fr. *Pentecoste*, *adj.* } *pentecoste*, i. e. the fiftieth, because kept fifty days after the passover. A feast among the Jews: pertaining to pentecost or Whitsuntide.

And whanne the daies of *pentecoste* weren filled all his disciples weren togedre in the same place.

Wiclif. Dedis 2.

But I will tarry at Ephesus until *pentecost*.

1 Cor. xvi. 8.

'Tis since the nuptial of Lucenio,

Come *pentecost* as quickly as it will,

Some five-and-twenty years.

Shakespeare.

This was a feast, the feast of *pentecost*, but for the estate of these Jews it was a day of contrition, a day of deep hunger and thirst after righteousness.

Bp. Hall.

I have composed sundry collects, made up out of the church collects, with some little variation; as the collects adventual, quadregesimal, paschal, or *pentecostal*.

Sanderson.

At the time of *Pentecost*, when the Jews were obliged to rejoice before the Lord, rendering thanks unto him for the harvest newly gathered in—did God bountifully impart the first fruits of his Holy Spirit.

Barrow.

Pentecost signifies the fiftieth, because this feast was celebrated the fiftieth day after the sixteenth of Nisan, which was the second day of the feast of the passover; the Hebrews call it the feast of weeks, because it was kept seven weeks after the passover: they then offered the first fruits of the wheat harvest, which then was completed: it was instituted to oblige the Israelites to repair to the temple, there to acknowledge the Lord's dominion, and also to render thanks to God for the law he had given them from Mount Sinai, on the fiftieth day after their coming out of Egypt.

Calmet.

PENTECOST. At this feast the Jews presented at the temple seven lambs of that year, one calf, and two rams, for a burnt offering; two lambs for a peace offering; and a goat for a sin offering: Levit. xxiii. 15, 16; Exod. xxiv. 22, and Deut. xvi. 9, 10. The modern Jews celebrate the *pentecost* for two days. They deck the synagogue and their own houses with garlands of flowers. They hear a sermon in praise of the law, which they suppose to have been delivered on this day. The Jews of Germany make a very thick cake, consisting of seven layers of paste, which they call Sinai. The seven layers represent the seven heavens, which they think God reascended from the top of this mountain. See Leo de Modena and Buxtorffii synag. Jud. It was on the feast of *pentecost* that the Holy Ghost miraculously descended on the apostles. Acts ii.

PENTECOST, an island in the Archipelago of the Great Cyclades. It was discovered by Bougainville on *Pentecost* day, 22d May, 1768. It is six miles from Aurora Island.

PENTELICUS, a mountain of Attica, famous for beautiful marble.

PENTHESILLA, a queen of the Amazons, succeeded Orythia, and gave proofs of her courage at the siege of Troy, where she was killed by Achilles. Pliny says that she invented the battle-axe.

PENTHEUS, in fabulous history, the son of Ethion and Agave, king of Thebes in Bœotia. He was murdered by the Bacchanalian women, for opposing the worship of Bacchus, then newly introduced; though others say it was for prying into the mysteries of the new deity. His mother and his aunts, Ino and Autonoe, were the first to tear him to pieces. Ovid. Met. iii. fab. 7, 8, 9. Virg. Æn. iv. 469. See MYSTERIES.

PENTHILUS, a son of Orestes and Erigone, the daughter of Ægysthus; who reigned conjunctly with his brother Tisamenēs at Argos, till they were expelled by the Heraclidae. He then went to Achaia, and thence to Lesbos, where he planted a colony.—Paus. 4. Patern. 1. c. 1.

PENTHORUM, in botany, a genus of the pentagynia order and pentandria class of plants: CAL. quinquefid; there are either five petals or none: CAPS. five-pointed and quinquelocular.

PENTHYLUS, a king of Paphos, who assisted Xerxes with twelve ships. Being seized by the Greeks he gave them much useful information as to the situation of the Persians.—Herod. vii. 195.

PENTILE, *n. s.* Pent and tile. A tile formed to cover the sloping part of the roof: often called pantiles.

Pentiles are thirteen inches long, with a button to hang on the laths; they are hollow and circular.

Mason.

PENTLAND FRITH, or PICTLAND FRITH, a narrow strait of twelve miles between the main land of Scotland and the Orkney Isles. This strait is the great thoroughfare for shipping between the east and west seas, the terror of the boldest mariners, and the grave of thousands. By the meeting of many different tides, the sea runs with such impetuosity that no vessel can

withstand it. The spray is often driven several miles on land. These storms however, afford many natives on the opposite shores a better livelihood than they could obtain by fishing or husbandry. They search from place to place, and from one cavern to another, in the hopes of finding timber, casks, and other floating articles of the wrecked vessels. The navigation of this pass is rendered more dangerous by the island of Stroma, and two rocks called the Skerries, lying near the middle of it. It may be crossed and sailed through, however, without danger, at particular times, known to the pilots on that coast.

PENTLAND HILLS, a ridge of hills which begin about four miles south by west of Edinburgh, and extend ten miles west towards the west borders of Mid Lothian. They are mostly green to the top, and afford excellent pasture to numerous flocks of sheep. The valleys between them are watered by several romantic streams; particularly the North Esk, Glencross, and Logan Water. Some of the hills are very high. Carketan Craig, the most northern, is 1450 feet above the sea level; Capelaw, west of it, is 1550; and Logan House hill is 1700. In this last is found the stone called Petunse Pentlandica, from its resemblance to the materials used in China for making china wares. The hills of Braid and Blackford are a continuation of this ridge.

PENTLAND SKERRIES, three islands in the east end of Pentland Frith; on the largest of which two light-houses were erected in 1794; four miles north-east of Duncan's-bay Head.

PENUCONDA, or Bilconda, an old town and fortress of the Mysore, south of India. On the defeat of the Hindoo sovereign of Bijanagur, in 1564, he fixed his residence here for some time, but finding it inconvenient removed back to Chandgherry. In 1575 Penuconda was besieged by the Mahometans, but nobly defended by Jug Deo, a relation of the Maha rajah, in recompense for which he received the government of an extensive district, which remained in his family, till dispossessed by the rajah of Mysore; since this period it has fallen to decay. It is now included in the British territories. Long. 77° 40' E., lat. 14° 1' N.

PENULA, among the ancient Romans, was a coarse garment or cloak worn in cold or rainy weather. It was shorter than the lacerna, and therefore more proper for travellers. It was generally brown, and succeeded the toga after the state became monarchical. Augustus abolished the custom of wearing the penula over the toga, considering it as too effeminate for Romans; and the ædiles had orders to suffer none to appear in the circus or forum with the lacerna or penula. Writers are not agreed as to the precise difference between these two articles of dress; but we are told that they were chiefly worn by the lower orders of people.

PENULTIMA, or PENULTIMATE SYLLABLE, in grammar, the last syllable but one of a word.

PENUMBRA, *a. s.* Lat. *pene* and *umbra*. An imperfect shadow; that part of the shadow which is half enlightened.

The breadth of this image answered to the sun's diameter, and was about two inches and the eighth part of an inch, including the *penumbra*. *Newton*.

PENUMBRA, in astronomy, is a partial shade observed between the perfect shadow and the full light in an eclipse. It arises from the magnitude of the sun's body: for were he only a luminous point, the shadow would be all perfect; but, by reason of the diameter of the sun, it happens, that a place which is not illuminated by the whole body of the sun does yet receive rays from a part thereof.

PENURY, *n. s.* Lat. *penuria*. Poverty; indigence; PENURIOUSLY, *adv.* want: penurious is, PENURIOSNESS, *n. s.* in the manner of one indigent, hence parsimonious; mean; niggardly; the adverb and noun substantive corresponding: penurious, niggardly; sparing; sordid.

Who can perfectly declare
The wondrous cradle of thy infancy?
When thy great mother Venus first thee bare,
Begot of plenty and of penury. *Spenser*.

The penury of the ecclesiastical state. *Hooker*.

Sometimes am I a king
Then treason makes me wish myself a beggar;
And so I am: then crushing penury
Persuades me I was better when a king;
Then I am kinged again.

Shakspeare. Richard III.
Let them not still be obstinately blind,
Still to divert the good designed,
Or with malignant penury
To starve the royal virtues of his mind. *Dryden*.
All innocent they were exposed to hardship and
penury, which, without you, they could never have
escaped. *Sprat*.

Some *penurious* spring by chance appeared
Scanty of water. *Addison*.
If we consider the infinite industry and *penuriousness* of that people, it is no wonder that, notwithstanding they furnish as great taxes as their neighbours, they make a better figure. *Id*.

What more can our *penurious* reason grant
To the large whale or castled elephant? *Prior*.
May they not justly to our climes upbraid
Shortness of night, and penury of shade? *Id*.
O blessed effect of penury and want,
The seed sown there, how vigorous is the plant!
No soil like poverty for growth divine,
As least land supplies the richest wine. *Cowper*.

PENZANCE, a sea-port and market-town of Penwith hundred, Cornwall, on the north-west side of Mount's Bay, three miles from Marazion, and 280 W. S. W. from London. The town is well built, and is formed principally of four streets. Several ships belong to the port, although the harbour will not admit large vessels. The pier, which was first erected nearly fifty years since, was considerably extended in 1813, and was improved in 1816 by the erection of a light-house. It has several meeting houses for dissenters, a Jews' synagogue: a grammar school, dispensary, geological society, an agricultural institution, &c. The surrounding country abounds with metallic ore, and it is said that at low water veins of lead, copper, and tin, are to be discovered in the sea. The tin mines furnish considerable traffic and employment here, and hot and cold baths have been established for the accommodation of invalids. The town is governed by a mayor, recorder, twelve aldermen, and twenty-four common-councillmen. In 1596

it was burnt by the Spaniards, but it was soon after rebuilt, and made a coinage town. High water, spring tides, at 5 o'clock. Market on Thursday. Fairs, Trinity Thursday and Holy Thursday.

PEON, in the language of Hindostan, a foot soldier, armed with sword and target. In common use, it is a footman, so armed, employed to run before a palanquin. Piada is the proper word, of which peon is a corruption.

PE'ONY, *n. s.* Lat. *peronia*. A flower.

A physician had often tried the *peony* root unseasonably gathered without success; but having gathered it when the decreasing moon passes under Aries, and tied the slit root about the neck of his patients, he had freed more than one from epileptical fits.

Boyle.

PEOPLE, *n. s.* Fr. *peuple*; Lat. *populus*. A nation; in this sense it admits the plural, frequent in Scripture, 'people'; the multitude; the commonalty or vulgar; men in general: to people is to stock with people.

For myn *gyhen* han seyn thin helth: which thou hast maad redy before the face of alle *peoplia*.

Wiclif. Luk. i.

Ants are a *people* not strong, yet they prepare their meat in summer.

Proverbs xxx. 26.

Prophecy again before many *peoples* and nations and tongues.

Revelations x. 11.

What is the city, but the *people*?

—True, the *people* are the city.

Shakespeare. Coriolanus.

Suppose that Brute, or whosoever else that first *peopled* this island, had arrived upon Thames, and called the island after his name Britannia. *Raleigh.*

If a man temper his actions to content every combination of *people*, the musick will be the fuller.

Bacon.

A small red flower in the stubble field country *people* call the wincope.

Id.

I must like beasts or common *people* dye,

Unless you write my elegy.

Cowley.

The knowing artist may

Judge better than the *people*, but a play

Made for delight,

If you approve it not, has no excuse. *Waller.*

He would not be alone, who all things can:

But *peopled* heaven with angels, earth with man.

Dryden.

The frogs petitioning for a king, bids *people* have a care of struggling with heaven.

L'Estrange.

Myself shall mount the rostrum in his favour, And strive to gain his pardon from the *people*.

Addison.

Imperious death directs his ebon lance; *Peoples* great Henry's tombs, and leads up Holben's dance.

Prior.

Watery liquors will keep an animal from starving by diluting the fluids; for *people* have lived twenty-four days upon nothing but water.

Arbutnot.

People were tempted to lend by great premiums and large interest.

Swift's Miscellanies.

People in adversity should preserve laudable customs.

Clarissa.

By solemn, awful ceremony, he

Was set apart to speak the truth entire,

By action and by word; and round him stood

The *people*, from his lips expecting knowledge.

Pollok.

PEOR, a famous mountain beyond Jordan, which Eusebius places between Heshbon and Livia. The mountains Nebo, Pisgah, and Peor, were near one another, and probably made the

same chain. It is very likely that Peor took its name from some deity, for Peor, Phagor, or Baal-Peor, was worshipped in this country. See Numb. xxv. 3; Deut. iv. 3; Psal. cv. 28; and BAAL-PEOR.

PEOR, a city of Judah, which is not mentioned in the Hebrew, nor in the Vulgate, but only in the Greek of the Septuagint. Josh. xv. 60. Eusebius says it was near Bethlehem, and Jerome adds, that in his time it was called Paora.

PEPARETHOS, an island in the Aegean Sea, on the coast of Macedonia, twenty miles in circumference; famous for excellent wine and olives. Plin. iv. 12; Ovid. Met. vii. 470; Liv. xxviii. 5.

PEPIN DE HERISTAL, or Le Gros, mayor of the palace under Clovis III., Childbert, and Dagobert III. The power of these mayors in France was so great that they left the sovereign only the empty title, and in the end seized on the throne itself.

PEPIN LE PETIT, or le Brief (i. e. the short), grandson to Pepin le Gros, and first king of the second race of French monarchs, was mayor of the palace to Childeric III., a weak prince: he contrived to confine him and his son Theodoric in different monasteries; and then with the assistance of pope Stephen III. he usurped the sovereign power. He died in 768, aged fifty-four. See FRANCE.

PEPLIS, in botany, a genus of the monogynia order, and hexandria class of plants: natural order seventeenth, calycanthemæ. The perianthium is campanulate; the mouth cleft in twelve parts; there are six petals inserted into the calyx: CAPS. bilocular.

PEPLUS, a long robe worn by the women in ancient times, reaching down to the feet, without sleeves, and so very fine that the shape of the body might be seen through it. The Athenians used much ceremony in making the peplus, and dressing the statue of Minerva in it. Homer makes frequent mention of the peplus of that goddess.

PEPOZIAN, a sect of Christian heretics, who sprung up in the second century; a branch of the Montanists.

PEP'PER, *n. s.* Fr. *poivre*: Lat. *pip. r.*; Ital. *pepen*; Gr. *πεπρι*. A pungent spice.

We have three kinds of *pepper*; the black, the white, and the long, which are three different fruits produced by three distinct plants: black *pepper* is a dried fruit of the size of a vetch and roundish, but rather of a deep brown than a black colour: with this we are supplied from Java, Malabar, and Sumatra, and the plant has the same heat and fiery taste that we find in the *pepper*: white *pepper* is commonly facetious, and prepared from the black, by taking off the outer bark; but there is a rarer sort, which is a genuine fruit, naturally white. long *pepper* is a fruit gathered while unripe and dried, of an inch or an inch and half in length, and of the thickness of a large goose quill.

Hill.

I have *peppered* two of them; two I have paid, two rogues in buckram suits.

Shakespeare. Henry IV.

I will now take the leacher; he cannot creep into a halfpenny purse nor into a *pepper*-box.

Shakespeare.

Our performances, though *dues*, are like these

peppercorns which freeholders pay their landlord to acknowledge that they hold all from him. *Boyle.*

Folks from mud-walled tenement
Bring landlords *peppercorn* for rent. *Prior.*

Scatter o'er the blooms the pungent dust
Of *pepper*, fatal to the frosty tribe. *Thomson.*

PEPPER, piper, in natural history, an aromatic berry of a hot dry quality, chiefly used in seasoning. Pepper is principally used by us in food, to assist digestion: but the people in the East Indies esteem it as a stomachic, and drink a strong infusion of it in water by way of giving them an appetite; they have also a way of making a fiery spirit of fermented fresh pepper with water, which they use for the same purposes. They have also a way of preserving the common and long pepper in vinegar, and eating them afterwards at meals. There are three kinds of pepper at present used in the shops, the black, the white, and the long pepper.

I. PEPPER, BLACK, is the fruit of the piper, and is brought from the Dutch settlements in the East Indies.

II. PEPPER, LONG, is a dried fruit, of an inch or an inch and a half in length, and about the thickness of a large goose quill: it is of a brownish gray color, cylindrical in figure, and produced on a plant of the same genus.

III. PEPPER, WHITE, is factitious, being prepared from the black in the following manner:—they steep this in sea-water, exposed to the heat of the sun for several days, till the rind or outer bark loosens; they then take it out, and, when it is half dry, rub it till the rind falls off; then they dry the white fruit, and the remains of the rind blow away like chaff. A great deal of the heat of the pepper is taken off by this process, so that the white kind is more fit for many purposes than the black. However, there is a sort of native white pepper produced on a species of the same plant; which is much better than the factitious, and indeed little inferior to the black.

PEPPER, BARBARY. See CAPSICUM.

PEPPER, GUINEA. See CAPSICUM.

PEPPER, JAMAICA. See MYRTUS and PIMENTO.

PEPPER, POOR MAN'S. See LEPIDIUM.

PEPPER, WATER, a liquor prepared by putting common black pepper, grossly powdered, into an open vessel of water. In a few days it acquires a pellicle or thin surface, which is composed entirely of animalcules excellently adapted for microscopical observation.

PEPPER GRASS. See PILULARIA.

PEPPER-MINT. See MENTHA.

PEPPER-MINT TREE, in botany, the eucalyptus piperita. In a journal of a voyage to New South Wales, by John White, esq., we have a plate of this tree, with the following account of it:—'This tree grows to the height of more than 100 feet, and is above thirty feet in circumference. The bark is very smooth, like that of the poplar. The younger branches are long and slender, angulated near the top; but as they grow older the angles disappear. Their bark is smooth, and of a reddish brown. The leaves are alternate, lanceolate, pointed, very entire, smooth on both sides, and remarkably unequal or oblique at their base; the veins alternate, and not very con-

spicuous. The whole surface of both sides of the leaves is marked with numerous minute resinous spots, in which the essential oil resides. The foot-stalks are about half an inch in length, round on the under side, angular above, quite smooth. The flowers we have not seen. What Mr. White has sent as the ripe capsules of this tree (although not attached to the specimens of the leaves) grow in clusters, from six to eight in each, sessile and conglomerated. These clusters are supported on angular alternate footstalks, which form a kind of panicle. Each capsule is about the size of a hawthorn berry, globular, but as it were cut off at the top, rugged on the outside, hard and woody, and of a dark brown color. At the top is a large orifice, which shows the internal part of the capsule divided into four cells, and having a square column in the centre, from which the partitions of the cell arise. These partitions extend to the rim of the capsule, and terminate in four small projections, which look like the teeth of a calyx. The seeds are numerous, small, and angular. The name of pepper-mint tree has been given to this plant by Mr. White, on account of the very great resemblance between the essential oil drawn from its leaves and that obtained from the pepper-mint (*mentha piperita*) which grows in England. This oil was found by Mr. White to be much more efficacious in removing all cholicky complaints than that of the English peppermint, which he attributes to its being less pungent and more aromatic. A quart of the oil had been sent by him to Mr. Wilson. The tree appears to be undoubtedly of the same genus with that cultivated in some greenhouses in England, which M. L'Héritier has described in his *Sertum Anglicum* by the name of *eucalyptus obliqua*, though it is commonly called in the gardens *metrosideros obliqua*; but we dare not assert it to be the same species, nor can this point be determined till the flowers and every part of both be seen and compared: we have compared the best specimens we could procure of each, and find no specific difference. The *eucalyptus obliqua* has, when dried, an aromatic flavor, somewhat similar to our plant. We have remarked, indeed, innumerable minute white spots, besides the resinous ones, on both surfaces of the leaves in some specimens of the garden plant, which are not to be seen in ours; and the branches of the former are rough, with small scaly tubercles. But how far these are constant we cannot tell. The obliquity in the leaves, one side being shorter at the base than the other, as well as somewhat narrower all the way up, as in the *Begonia nitida* of the *Hortus Kewensis*, is remarkable in both plants. Mr. White's figure represents a branch of the pepper-mint tree in leaf: on one side of it part of a leaf separate, bearing the gall of some insect; on the other the fruit above described.'

PEPPER-POT. See CAPSICUM.

PEPPER-WORT. See LEPIDIUM.

PEPUSCH (John Christopher), Mus. D., and F. R. S., one of the greatest theoretic or scientific musicians of modern times, was born at Berlin in 1667. In 1680, when not fifteen, he had made such proficiency on the harpsichord that he was appointed to teach music to the prince royal of

Prussia. About 1700 he came over to England, and was engaged at Drury Lane. The popularity of Handel kept him in the secondary rank; but Pepusch chose a new track for himself, and taught music in the full sense of the word; i. e. the principles of harmony and the science of composition,—not to children or novices, but to professors of music themselves, who attended him; so much were his talents and judgment respected. In 1713 the University of Oxford admitted him Doctor of Music. In 1724 he accepted an offer from Dr. Berkeley to go with him to Bermudas, as professor of music in his intended college; but the ship being wrecked he returned to London, and married Frances Margaret De L'Epine, who had made a fortune of 10,000 guineas by her voice. His fortune and reputation were now at their height. At the desire of Messrs. Gay and Rich he composed the music for the Beggar's Opera. In 1737 he was chosen organist for the Charter House. In 1740 his wife died, and a short time after their only son. He wrote An Account of the Ancient Genera of Music, which was read before the Royal Society, and published in the Phil. Trans. for October, November, and December, 1736; and was soon after chosen F. R. S. He died July 20th, 1752, aged eighty-five.

PEPYS (Samuel), F. R. S., secretary to the admiralty in the reigns of Charles II. and James II., was born at Brampton in Huntingdonshire, of an ancient family of the same name, of Cottenham in Cambridgeshire, and educated at St. Paul's school, London, whence he was removed to Magdalen College, Cambridge. He early acquired the patronage of the earl of Sandwich, who employed him as secretary in the expedition for bringing Charles II. from Holland. On his return he was appointed one of the principal officers of the navy, which post he maintained during the plague, the fire of London, and the Dutch war. In 1673, when the king took the admiralty into his own hands, he appointed Mr. Pepys secretary. In 1684 he was accused of being a papist, without a shadow of proof; and soon after, the admiralty being put into commission, he lost his place. He was still, however, employed under lord Dartmouth, in the expedition against Tangier, and often accompanied the duke of York to Scotland, and in his cruises. When Charles II. resumed the office of lord high admiral he was once more appointed secretary, and held the office until the Revolution. On the accession of William and Mary he resigned, and published his 'Memoirs,' relating to the navy. He led a very retired life from this time; and, having survived his lady, retired for two years before his death to the seat of a naval friend at Clapham, where he died May 26th, 1703. Such indeed was his literary and scientific reputation that in 1684 he was elected president of the Royal Society, which office he held for ten years. He left a large collection of MSS. to Magdalen College, Oxford, and five large folio volumes of ancient English poetry, begun by Seldep, and carried down to 1700, from which the Reliques of Ancient English Poetry, by Dr. Percy, are chiefly selected. Mr. Pepys has lately become more known by the publica-

tion of his very interesting Diary, by lord Braybrooke.

PEPYS' ISLANDS, a name given to Falkland Islands.

PERA, one of the suburbs of Constantinople, where ambassadors and Christians usually reside. See **CONSTANTINOPLE.**

PERACUTE', *adj.* Lat. *peracutus*. Very sharp or violent.

Malign, continual *peracute* fevers, after most dangerous attacks, suddenly remit of the ardent heat.

Harvey.

PERADVENTURE, *adv.* & *n. s.* Fr. *par aventure*. Perhaps; may be; by chance; as a noun-substantive, doubt or question.

For a good man *peradventure* summan dar die.

Wiclif. Rom. 5.

Peradventure there be fifty righteous within the city; wilt thou also destroy and not spare the place for the fifty righteous that are therein?

Genesis xviii. 24.

That wherein they might not be like unto either, was such *peradventure* as had been no whit less unlawful.

Hooker.

As you return, visit my house; let our old acquaintance be renewed; *peradventure* I will with you to court.

Shakespeare.

What *peradventure* may appear very full to me, may appear very crude and maimed to a stranger.

Digby.

Though men's persons ought not to be hated, yet without all *peradventure* their practices justly may.

South.

PERAGRATION *n. s.* Lat. *peragro*. The act of passing through any state or space. Obsolete.

A month of *peragation* is the time of the moon's revolution from any part of the zodiac into the same again, and this containeth but twenty-seven days and eight hours.

Broune.

The moon has two accounts which are her months or years of revolution; one her periodick month, or month of *peragation*, which chiefly respects her own proper motion or place in the zodiac, by which she like the sun performs her revolution round the zodiac from any one point to the same again.

Holder on Time.

PERAMBAUCAM, a town of the south of India, Carnatic. This, though a small place, is memorable for the defeat and destruction of a fine British army, commanded by the gallant colonel Baillie, in the month of September 1780, by Hyder Aly. Of eighty-six British officers present, thirty-six were killed, thirty-four wounded, and the remaining sixteen taken prisoners; the greater part of them dying in captivity. In August 1781 a second battle was fought here between Hyder and the army commanded by Sir Eyre Coote. On this occasion the British were victorious. It is situated on the south side of the Courtellier, fourteen miles north-east of Co-nieveram.

PERAM'BULATE, v. a. } Lat. *perambulo*.

PERAMBULA'TION, n. s. } To walk, or pass through; survey by passing through: perambulation is, the act of passing through; survey made, or districts perambulated.

The duke looked still for the coming back of the Armada, even when they were wandering and making their *perambulation* of the northern seas.

Beacon.

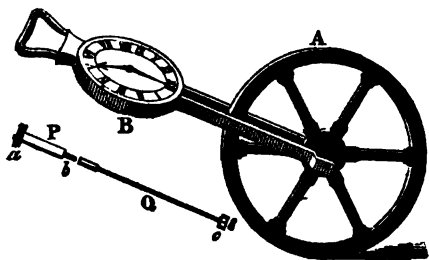
Persons the lord deputy should nominate to view and *perambulate* Irish territories, and thereupon to divide and limit the same.

Davies on Ireland.

It might in point of conscience be demanded, by what authority a private person can extend a personal correction beyond the persons and bounds of his own *perambulation*? *Holyday.*

France is a square of five hundred and fifty miles traverse, thronging with such multitudes that the general calcul, made in the last *perambulation*, exceeded eighteen millions. *Hovel.*

PERAMBULATOR, in surveying, an instrument for measuring distances, called also pedometer, way-wiser, and surveying-wheel. It consists of a wheel AA two feet seven inches and a



half in diameter; consequently half a pole, or eight feet three inches, in circumference. On one end of the axis is a nut, three quarters of an inch in diameter, and divided into eight teeth; which, upon moving the wheel round, fall into the eight teeth of another nut c, fixed on one end of an iron rod Q, and thus turn the rod once round in the time the wheel makes one revolution. This rod, laying along a groove in the side of the carriage of the instrument, has at its other end a square hole, into which is fitted the end b of a small cylinder P. This cylinder is disposed under the dial-plate of a movement, at the end of the carriage B, in such a manner as to be moveable about its axis; its end a is cut into a perpetual screw, which falling into the thirty-two teeth of a wheel perpendicular to it, upon driving the instrument forward, that wheel makes a revolution each sixteenth pole. On the axis of this wheel is a pinion with six teeth, which, falling into the teeth of another wheel of sixty teeth, carries it round every 160th pole, or half a mile. This last wheel, carrying a hand or index round with it over the divisions of a dial-plate, whose outer limb is divided into 160 parts, corresponding to the 160 poles, points out the number of poles passed over. Again, on the axis of this last wheel is a pinion, containing twenty teeth, which, falling into the teeth of a third wheel which has forty teeth, drives it once round in 320 poles, or a mile. On the axis of this wheel is a pinion of twelve teeth, which, falling into the teeth of a fourth wheel having seventy-two teeth, drives it once round in twelve miles. This fourth wheel, carrying another index over the inner limb of the dial-plate, divided into twelve for miles, and each mile subdivided into halves, quarters, and furlongs, serves to register the revolutions of the other hand, and so keep account of the miles and half miles

passed over, as far as twelve miles. The use of this instrument is obvious from its construction. Its proper office is the surveying of roads and large distances, where a great deal of expedition, and not much accuracy, is required. It is evident that driving it along and observing the hands has the same effect as dragging the chain and taking account of the chains and links. Its advantages are its hardness and expedition: its contrivance is such that it may be fitted to the wheel of a coach, in which state it performs its office, and measures the road without any trouble.

PERAMES, in geography, a town of America, in Bergen county, New Jersey, lying on the point of land formed by the branches of Saddle River, a north branch of the Passaic; about eighteen miles north of Bergen.

PERCA, the perch, a genus of fishes belonging to the order of thoracici. The head is furnished with scaly and serrated opercula; there are seven rays in the membrane of the gills; and the fins on the back are prickly. There are thirty-eight species, principally distinguished by peculiarities in the back fin. The most remarkable are—

1. *P. cernua*, the pope, or ruffe, is found in several English streams: it is gregarious, assembling in large shoals, and keeping in the deepest part of the water. It is of a much more slender form than the perch, and seldom exceeds six inches in length. The teeth are very small, and disposed in rows. It has only one dorsal fin, extending along the greatest part of the back; the first rays, like those of the perch, are strong, sharp, and spiny; the others soft. The body is covered with rough compact scales. The back and sides are of a dirty green, the last inclining to yellow but both spotted with black. The dorsal fin is spotted with black; the tail marked with transverse bars.

2. *P. fluviatilis*, or common perch, has a deep body, very rough scales, and the back much arched. The colors are beautiful; the back and part of the sides being of a deep green, marked with five broad black bars pointing downwards; the belly is white, tinged with red; the ventral fins of a fine scarlet; the anal fins and tail of the same color, but rather paler. In a lake called Llyn Raithlyn, in Merionethshire in Wales, is a very singular variety of this fish: the back part is quite hunched, and the lower part of the back-bone next the tail strangely distorted; in color and other respects it resembles the common perch, which are as numerous in this lake as the deformed fish. They are not peculiar to this water; for Linneus takes notice of them in a lake at Fahlun in his country. It is said that they are also met with in the Thames near Marlow. The perch was much esteemed as food by the Romans; nor is it less admired at present as a firm and delicate fish; and the Dutch are particularly fond of it when made into a dish called water-soupy. It is a gregarious fish, and loves deep holes and gentle streams; is exceedingly voracious, and an eager biter: if the angler meets with a shoal of them he is sure of taking every one. The perch is very tenacious of life, and has been known to survive a journey of sixty

miles in dry straw. It seldom grows to a large size, though Mr. Pennant mentions one that weighed nine pounds; but this is very uncommon.

3. *P. labrax*, the *basse*, is a very voracious, strong, and active fish. Ovid calls them *rabidi lupi*, a name continued to them by after writers; and they are said to grow to the weight of 15 lbs. The *irides* are silvery; the mouth large; the teeth are situated in the jaws, and are very small; in the roof of the mouth is a triangular rough space, and just at the gullet are two others of a roundish form. The scales are of a middling size, are very thick set, and adhere closely. The body is formed somewhat like that of a salmon. The color of the back is dusky, tinged with blue. The belly is white. In young fish the space above the side line is marked with small black spots. It is esteemed a very delicate fish.

4. *P. marina*, the sea-perch, is about a foot long: the head large and deformed; eyes great; teeth small and numerous. On the head and covers of the gills are strong spines. The color red, with a black spot on the covers of the gills, and some transverse dusky lines on the sides. It is a fish held in some esteem at the table.

5. *P. Nilotica*, the perch of the Nile, is taken about Cairo. The flesh has a sweet and exquisite flavor, and is not hard, but very white. It is one of the best fishes in the Nile; and, as it is of the largest size in Egypt, it adorns a table if brought upon it entire and well fried. See *PILOT-FISH*.

PERCASE, *adv.* Par and case. Perchance; perhaps. Not used.

A virtuous man will be virtuous in solitude, and not only in theatro, though *percase* it will be more strong by glory and fame, as an heat which is doubled by reflection. *Bacon*.

PERCEANT, *adj.* Fr. *perçant*. Piercing; penetrating. Obsolete.

Wond'rous quick and *perceant* was his spright
As eagles' eyes that can behold the sun. *Spenser*.

PERCEIVE, *v. a.* } Latin *percipio*.
PERCEIVABLE, *adj.* } To discover by
PERCEIVABLY, *adv.* } some effect; to
PERCEPTIBLY, *adj.* } know; be affected
PERCEPTIBLY, *adv.* } by; observe: per-
PERCEPTIBILITY, *n. s.* } ceivable and per-
PERCEPTION, *n. s.* } ceptible mean, dis-
PERCEPTIVE, *adj.* } coverable; such as
PERCIPIENT, *adj.* & *n. s.* } may be observed;
the adverbs corresponding: perceptibility, state
of being an object of perception; power of per-
ceiving; for which, however, perception is the
better word: perceptive, having the power of
perceiving: perception is perceiving: percipient
is perceiving, one who has the power of
perception.

His sons come to honour, and he knoweth it not;
and they are brought low, but he *perceiveth* it not. *Job* xiv. 21.

Jesus *perceived* in his spirit, that they so reasoned
within themselves. *Mark* ii. 8.

Consider,
When you above *perceive* me like a crow,
That it is place which lessens and sets off.

The upper regions of the air *perceive* the collection
of the matter of tempests before the air here below. *Shakespeare*.

No sound is produced but with a *perceptible* blast
of the air, and with some resistance of the air
stricken. *Bacon*.

Great mountains have a *perception* of the disposition
of the air to tempests sooner than the valleys below;
and therefore they say in Wales, when certain
hills have their night caps on, they mean mischief. *Id.*

Answer to this dimness of their *perception*, was
the whole system and body of their religion. *Id.*

Decay of Piety.
It *perceives* them immediately, as being immedi-
ately objected to and *perceptible* to the sense; as I
perceive the sun by my sight. *Hale*.

By the inventors and their followers that would
seem not to come too short of the *perceptions* of the
leaders, they are magnified. *Id.*

Id. Origin of Mankind.
There is a difficulty that pincheth; the soul is
awake and solicited by external motions, for some of
them reach the *perceptive* region in the most silent
repose and obscurity of night: what is it then that
prevents our sensations? *Glanville*.

The soul is the sole *percipient*, which hath ani-
madversion and sense properly so called, and the
body is only the receiver of corporeal impressions. *Id.*

The illumination is not so bright and fulgent, as
to obscure or extinguish all *perceptibility* of the rea-
son. *More*.

Whatever the least real point of the essence of the
perceptive part of the soul does *perceive*, every real
point of the *perceptive* must *perceive* at once. *Id.*

Id. Divine Dialogues.
The body, though it really moves, yet not chang-
ing *perceivable* distance with some other bodies, as
fast as the ideas of our own mind will follow one
another, seems to stand still; as the hands of clocks. *Locke*.

Sensation and *perception* are not inherent in mat-
ter as such; for, if it were so, every stock or stone
would be a *percipient* and rational creature. *Bentley*.

In the anatomy of the mind, as of the body, more
good will accrue to mankind by attending to the large,
open, and *perceptible* parts, than by studying too
much finer nerves. *Pope*.

The woman decays *perceptibly* every week. *Id.*
Matter hath no life nor *perception*, and is not con-
scious of its own existence. *Bentley's Sermons*.

Perception is that act of the mind, or rather a
passion or impression, whereby the mind becomes
conscious of any thing; as when I feel hunger,
thirst, cold, or heat. *Watts*.

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